

THE  
**CONTRACT JOURNAL**

INCORPORATING

THE BRITISH CONSTRUCTIONAL ENGINEER AND THE CONTRACTOR

[No. 4,298 83rd YEAR

THURSDAY, NOVEMBER 9, 1961

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OLYMPIA NOVEMBER 15<sup>th</sup>-29<sup>th</sup> 1961





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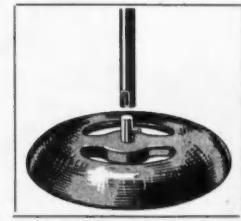
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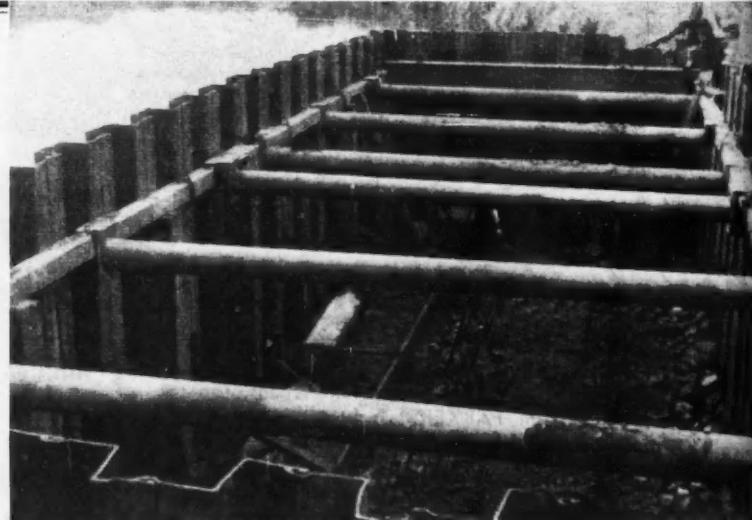


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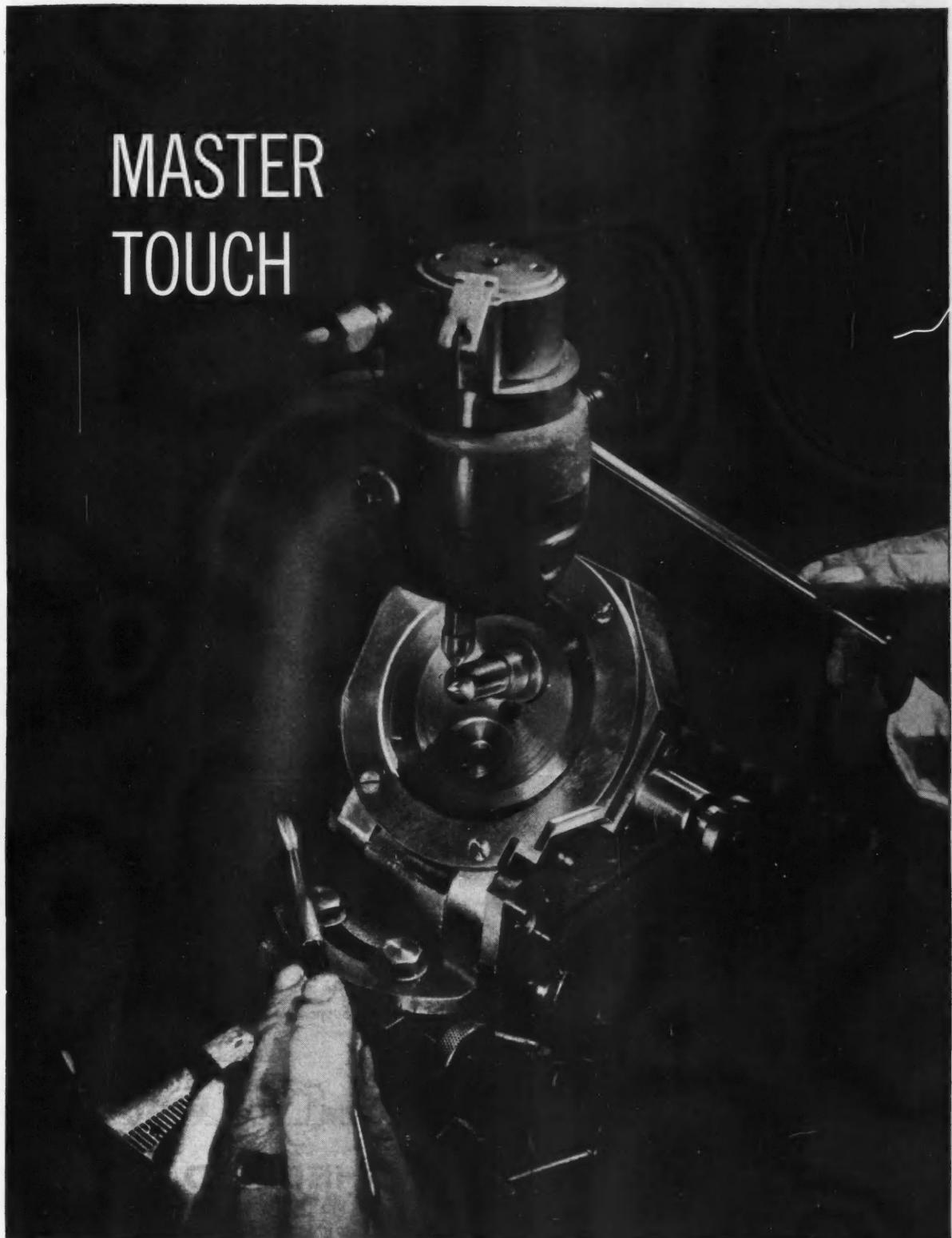
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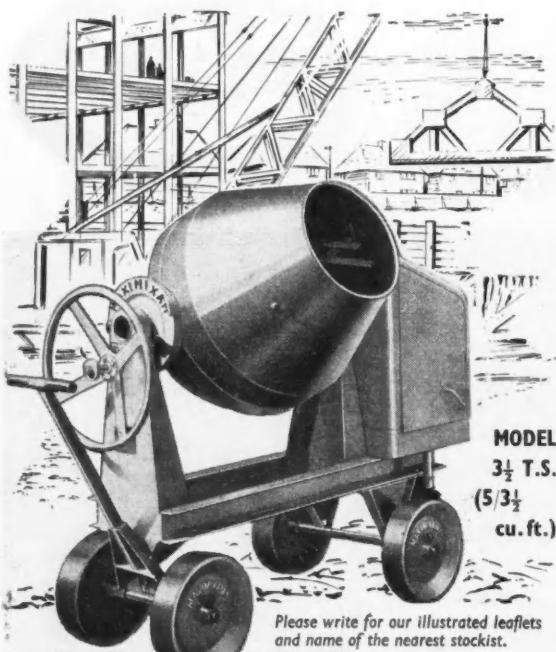
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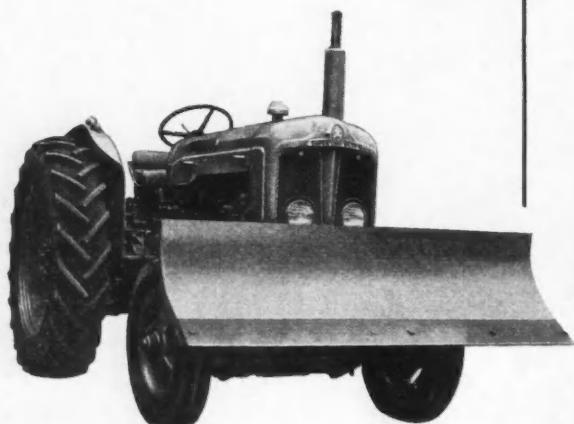
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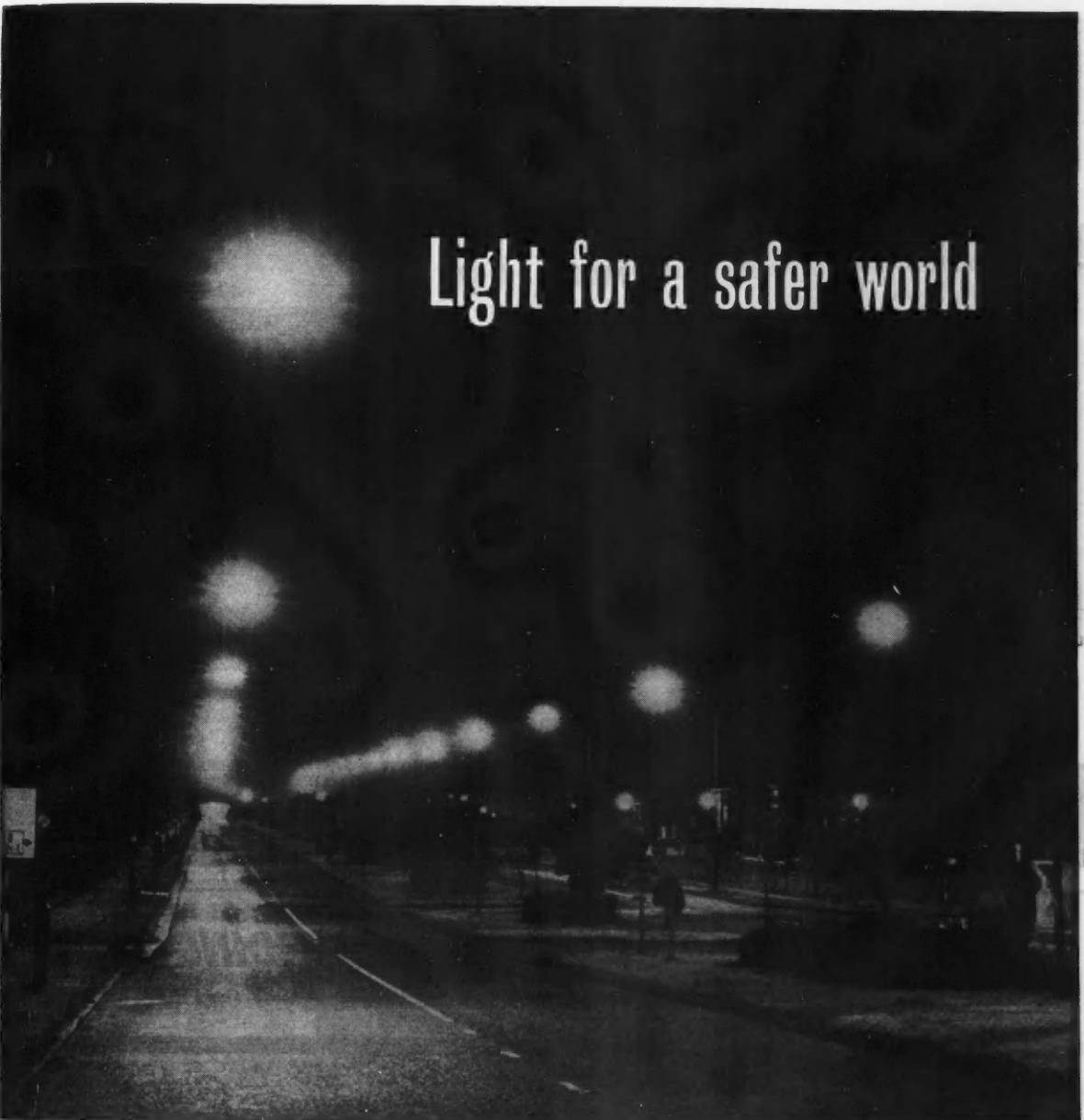
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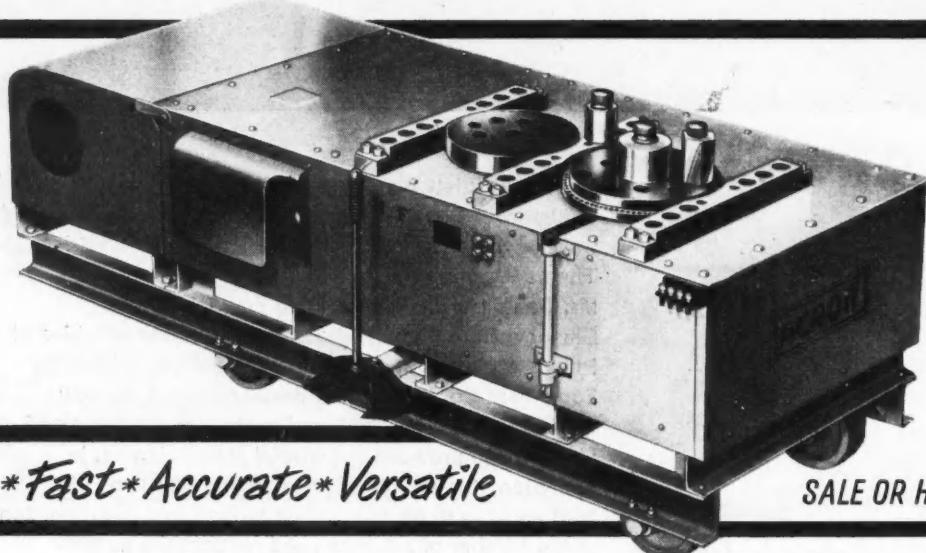
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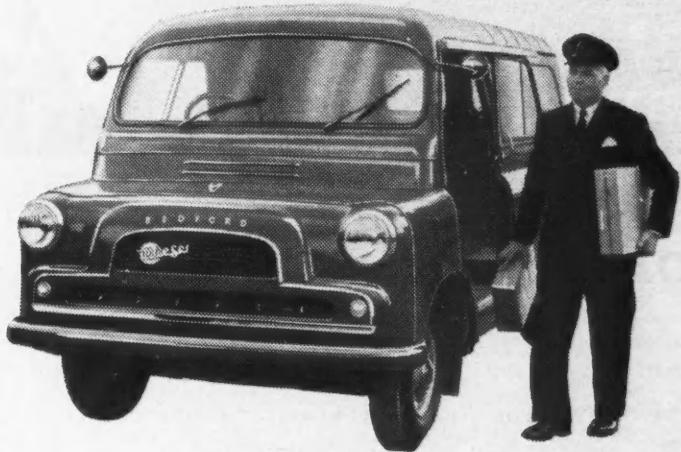
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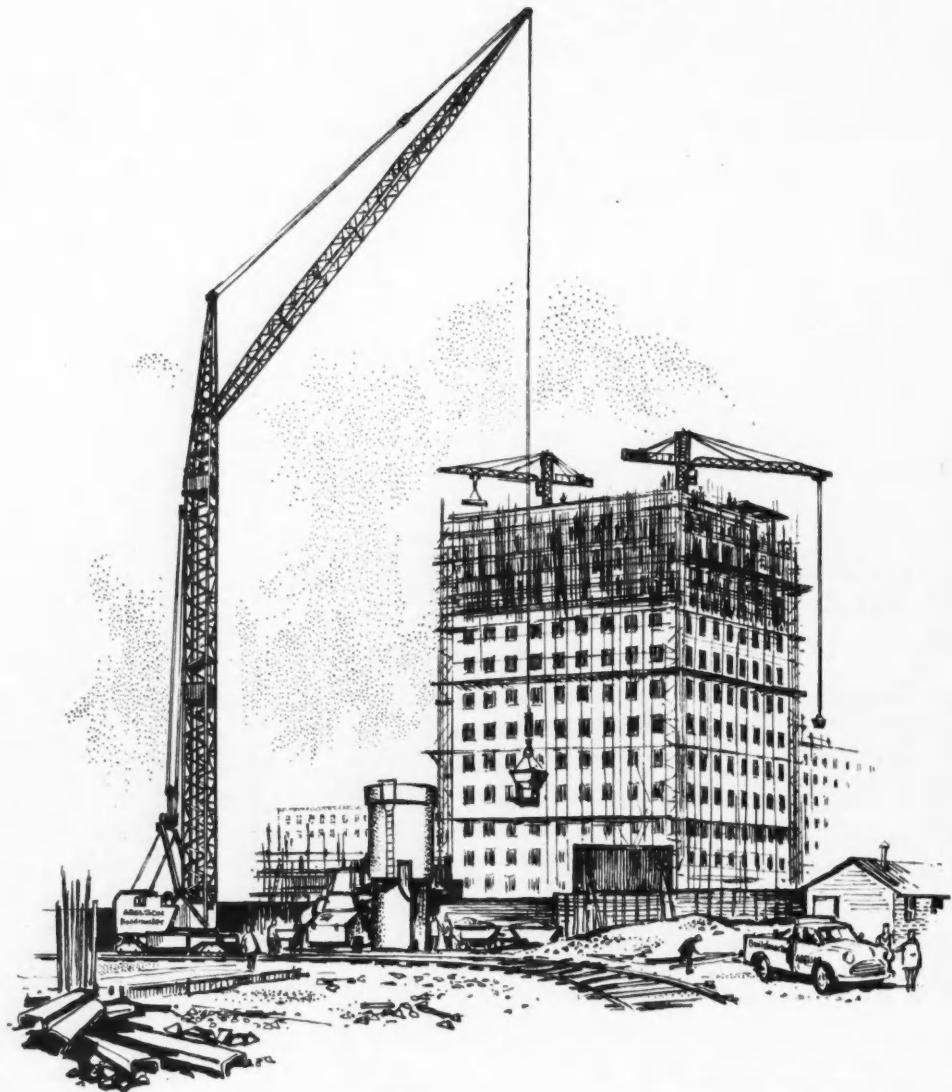
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THE CONTRACT JOURNAL

November 9 1961

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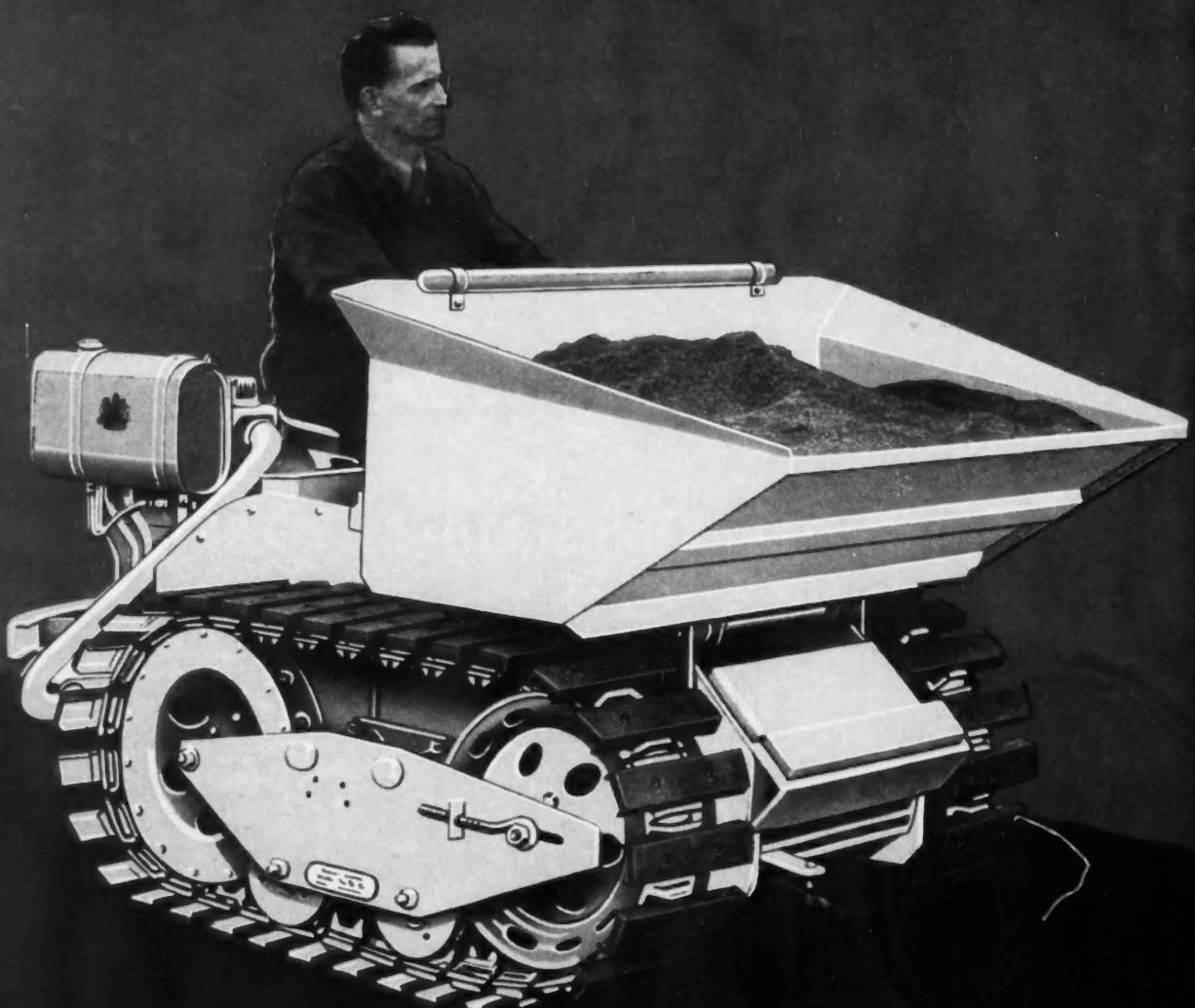
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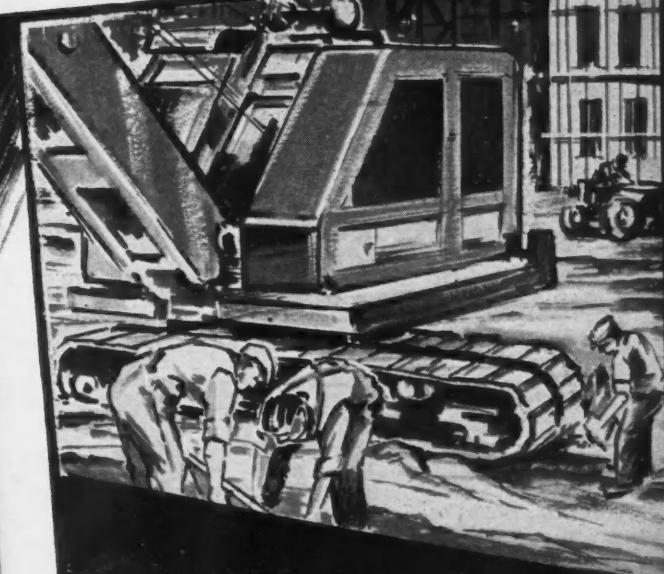
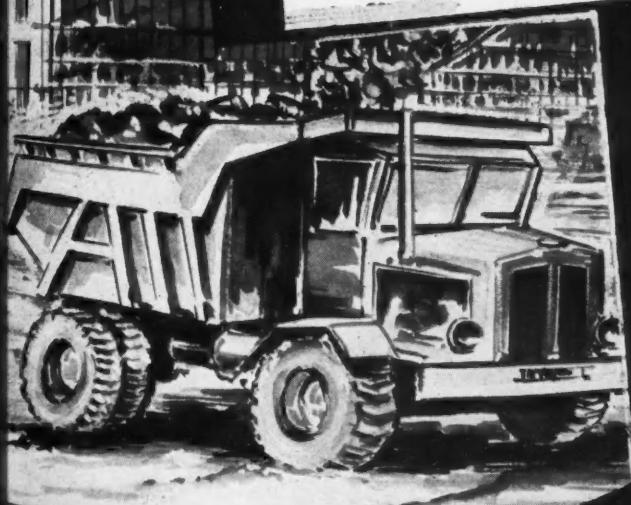
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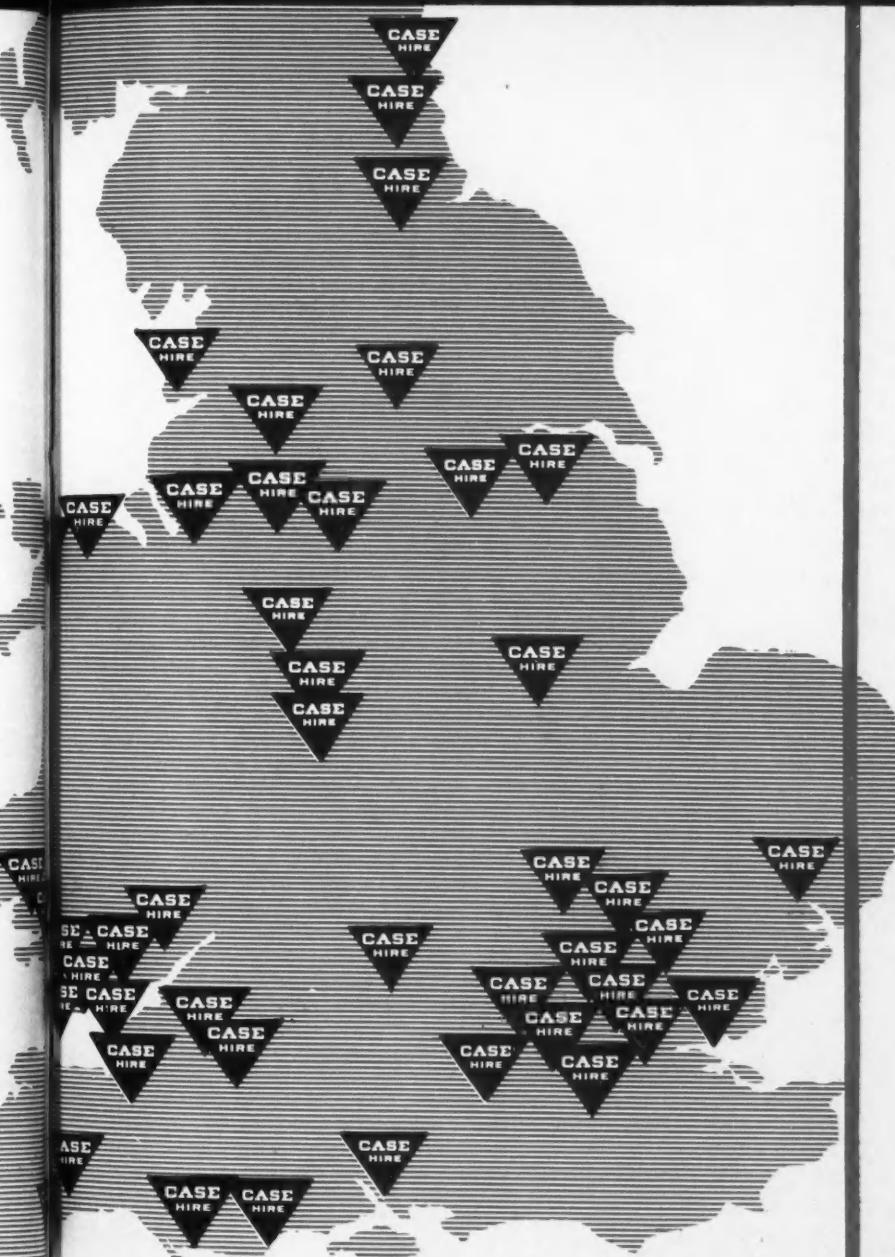
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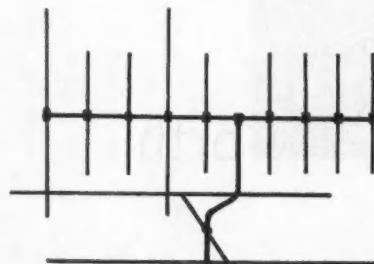
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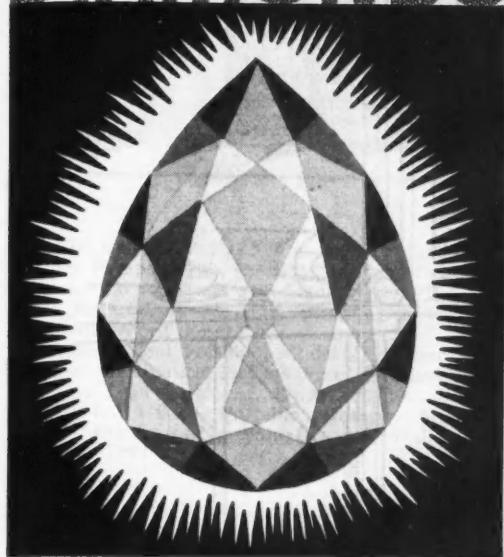
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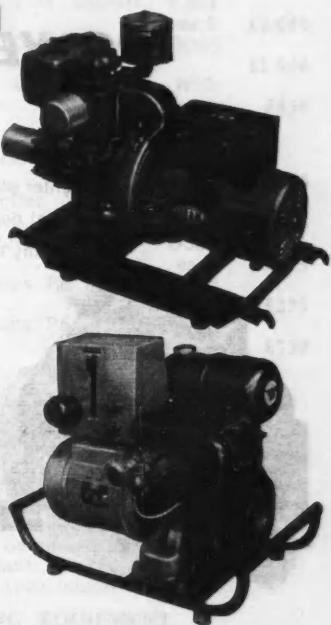
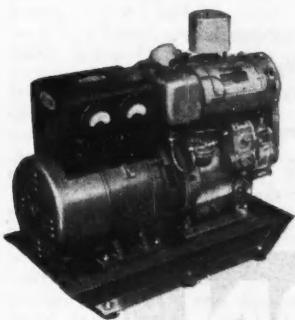
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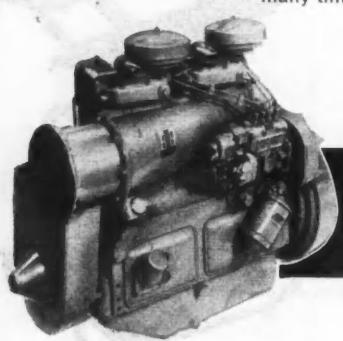
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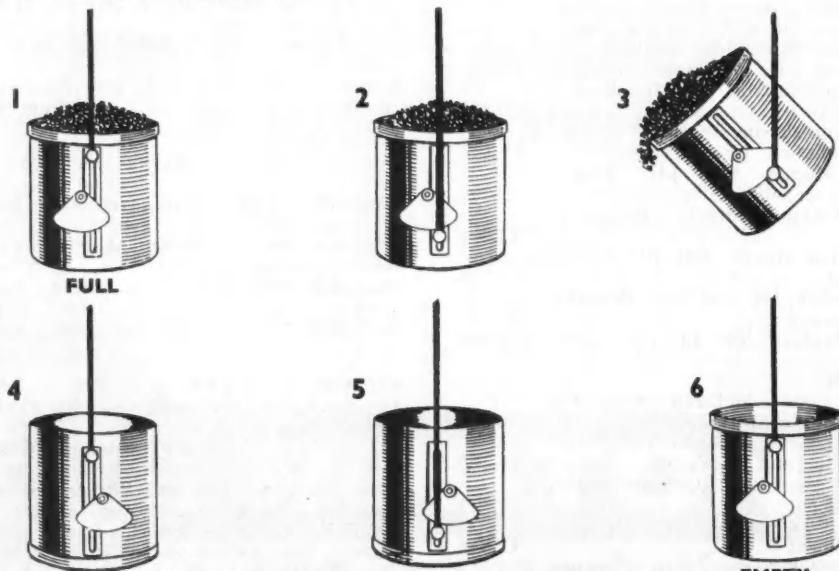
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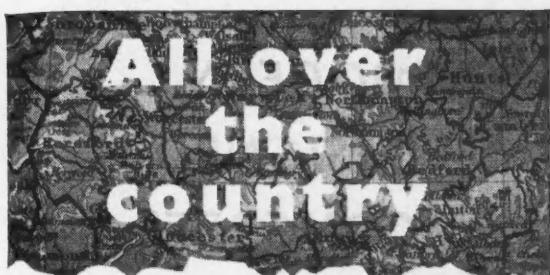


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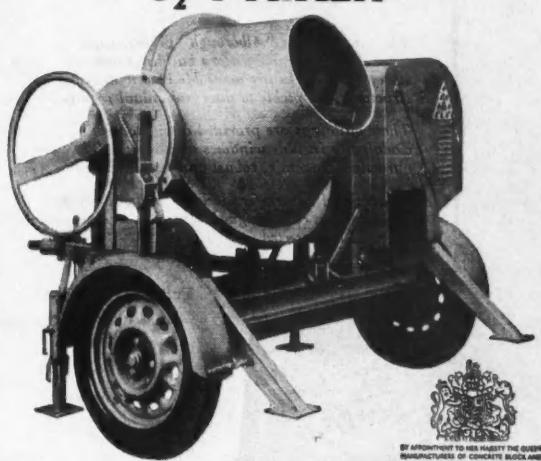
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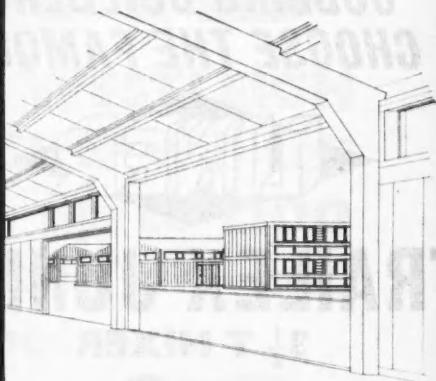
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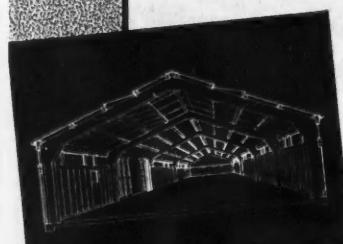
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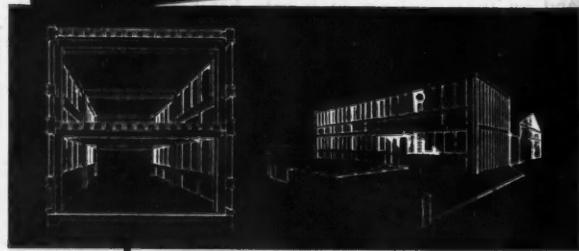
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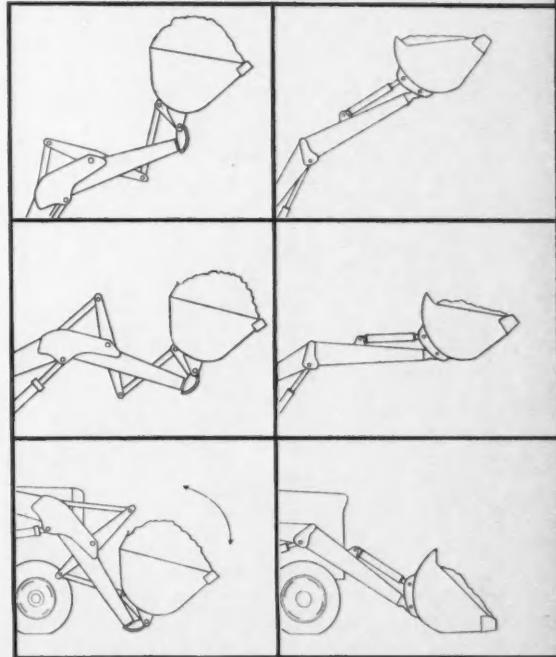
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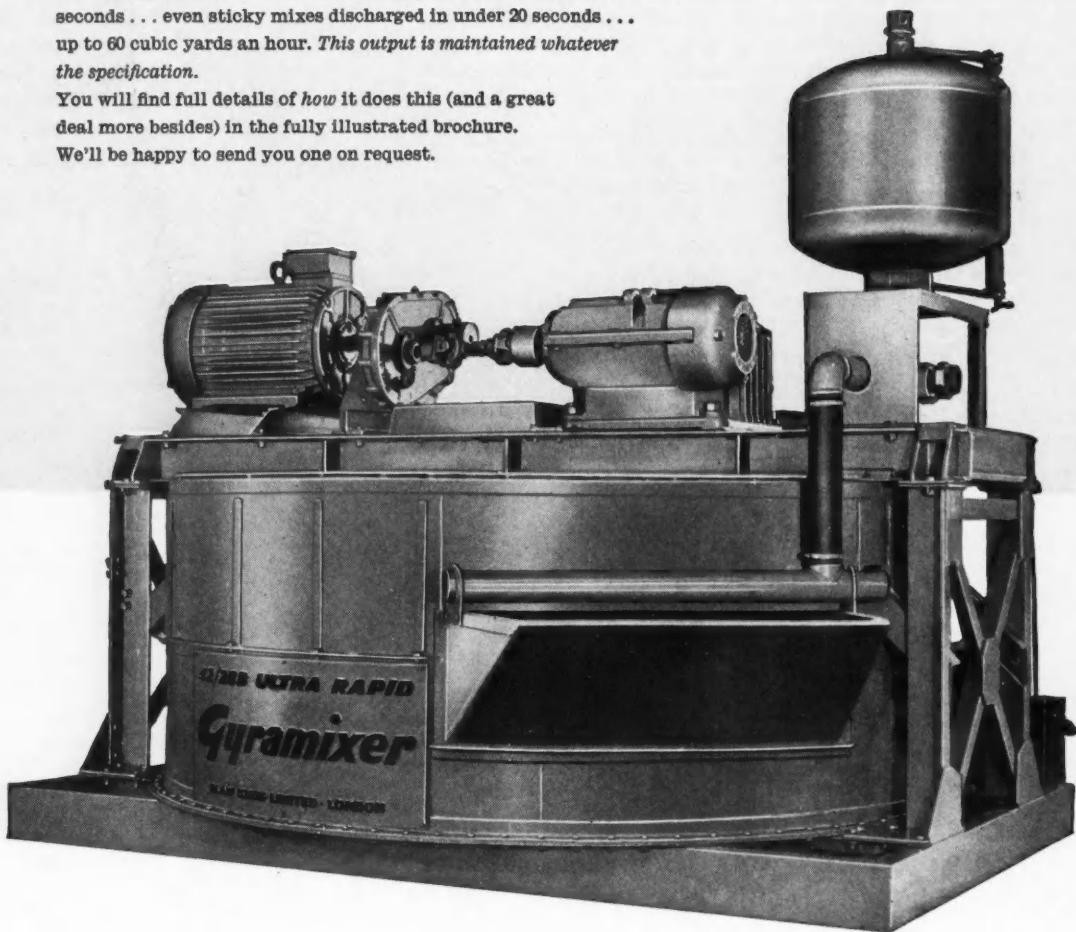
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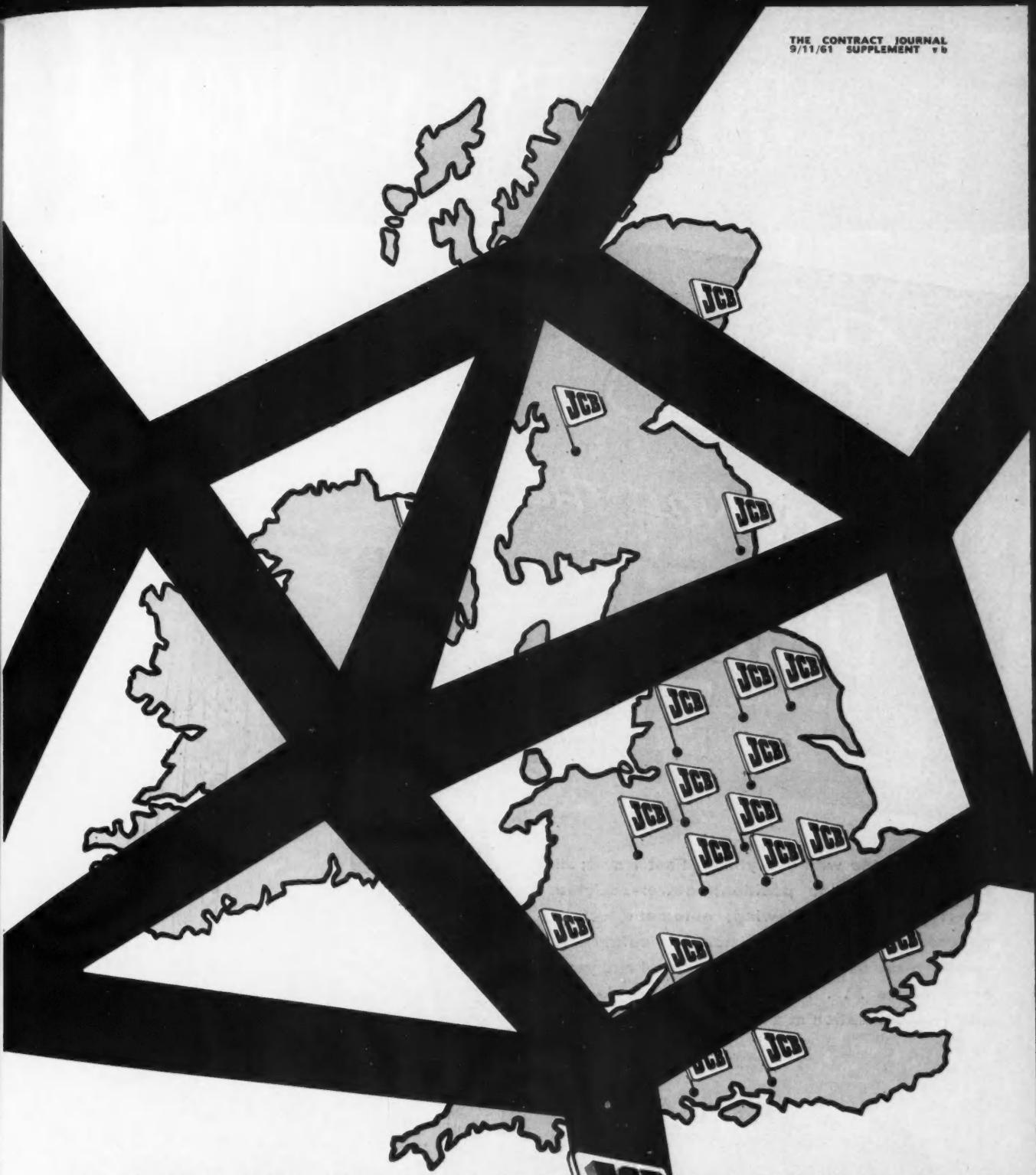
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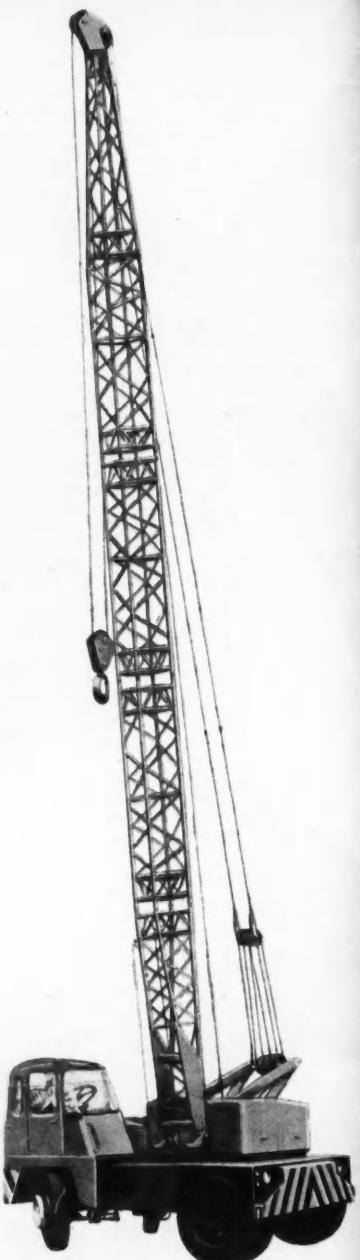
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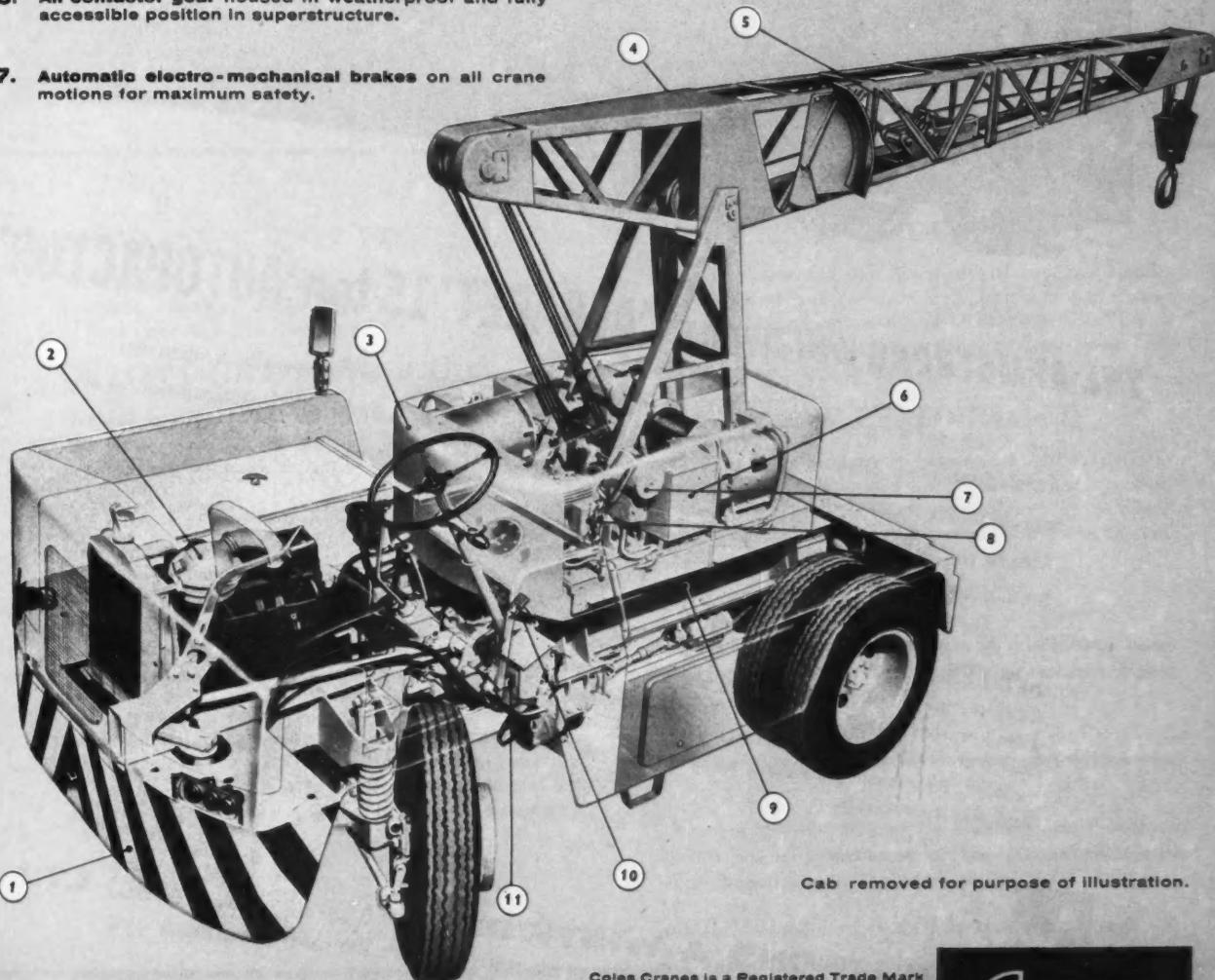
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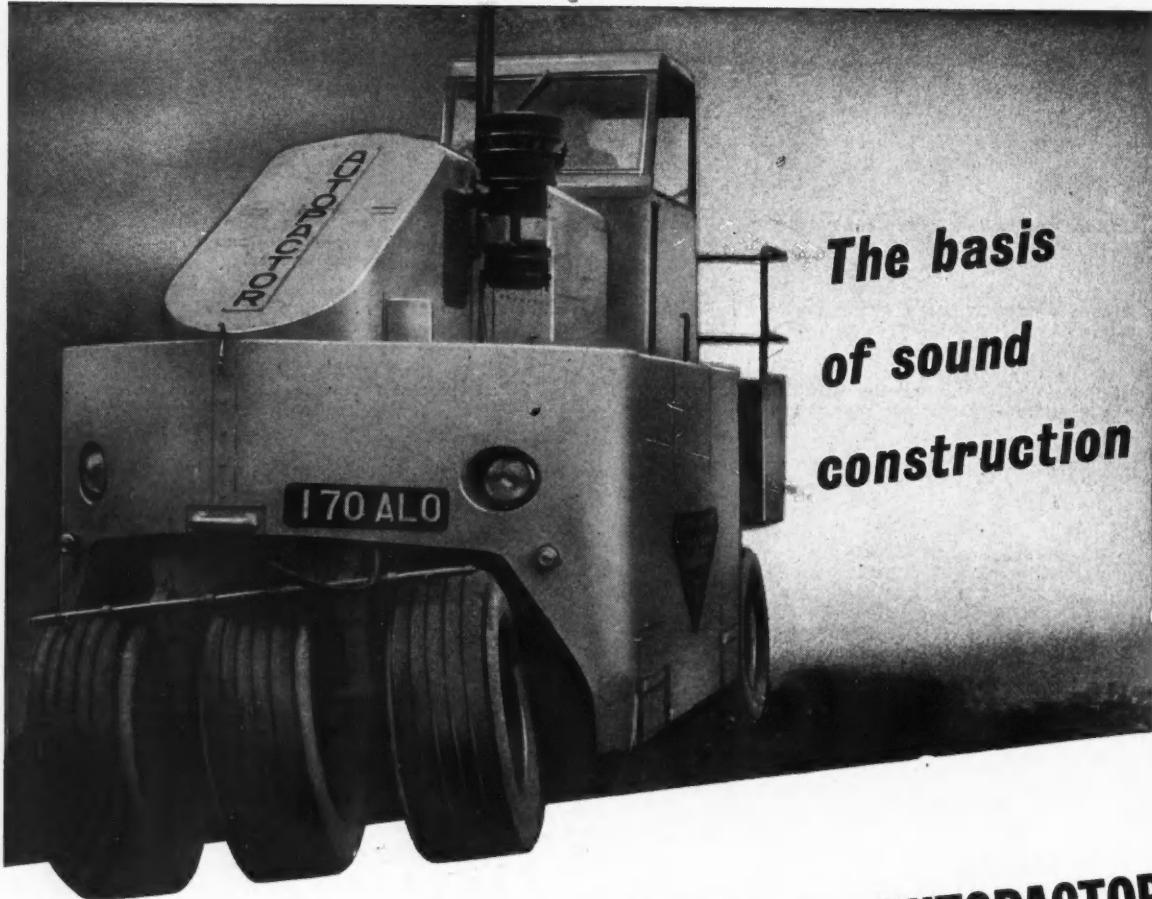
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Superficially one loading shovel may seem to be as good as another. In fact they differ marginally in many respects. These marginal advantages are important when they add up to an overwhelming superiority as they do with the Chaseside Loadmaster.

## **CONSIDER THESE CHASESIDE FEATURES:-**

### **RIGID INSPECTION PROCEDURE**

With no less than 150 items checked at four stages in the production of the machine the Loadmaster is as perfect as it can be when it reaches you.

### **QUALITY OF CONSTRUCTION**

Nothing is stinted in the production of a Loadmaster. Throughout the machine only the finest materials, components and first-class workmanship are employed.

### **ATTENTION TO DETAIL**

From the carefully planned layout of the controls to the special pre-treatment of metal surfaces prior to painting, no detail that will improve the performance and acceptability of the Loadmaster is overlooked.

### **SERVICE BACKING**

There are sixteen Chaseside service centres in the United Kingdom staffed by Chaseside trained service engineers. Similar facilities are provided in most overseas countries by Chaseside agents. The remarkable accessibility of the machine simplifies maintenance and reduces its cost.

### **LEADERSHIP IN DESIGN**

Chaseside were the first Company to produce mobile power shovels in this country, and also the first to realise that such a machine must be designed from the start as a shovel. With 35 years experience to draw upon, any new addition to the range always sets a new standard.

### **CONSISTENT PERFORMANCE**

Staying power to maintain 'demonstration' outputs for year after year. Ease of controls enables the operator, from his comfortably and comprehensively equipped cab, to get the best out of his machine even at the end of the day.

### **PRICE**

Chaseside Loadmasters seldom cost more than other machines but always command a substantially higher second-hand price.

Some of the advantages of a Chaseside will be obvious when you see a demonstration, the other advantages you only begin to appreciate after owning one.

*The MEXE report on the Loadmaster 1000 is now available and a copy will be sent on request.*

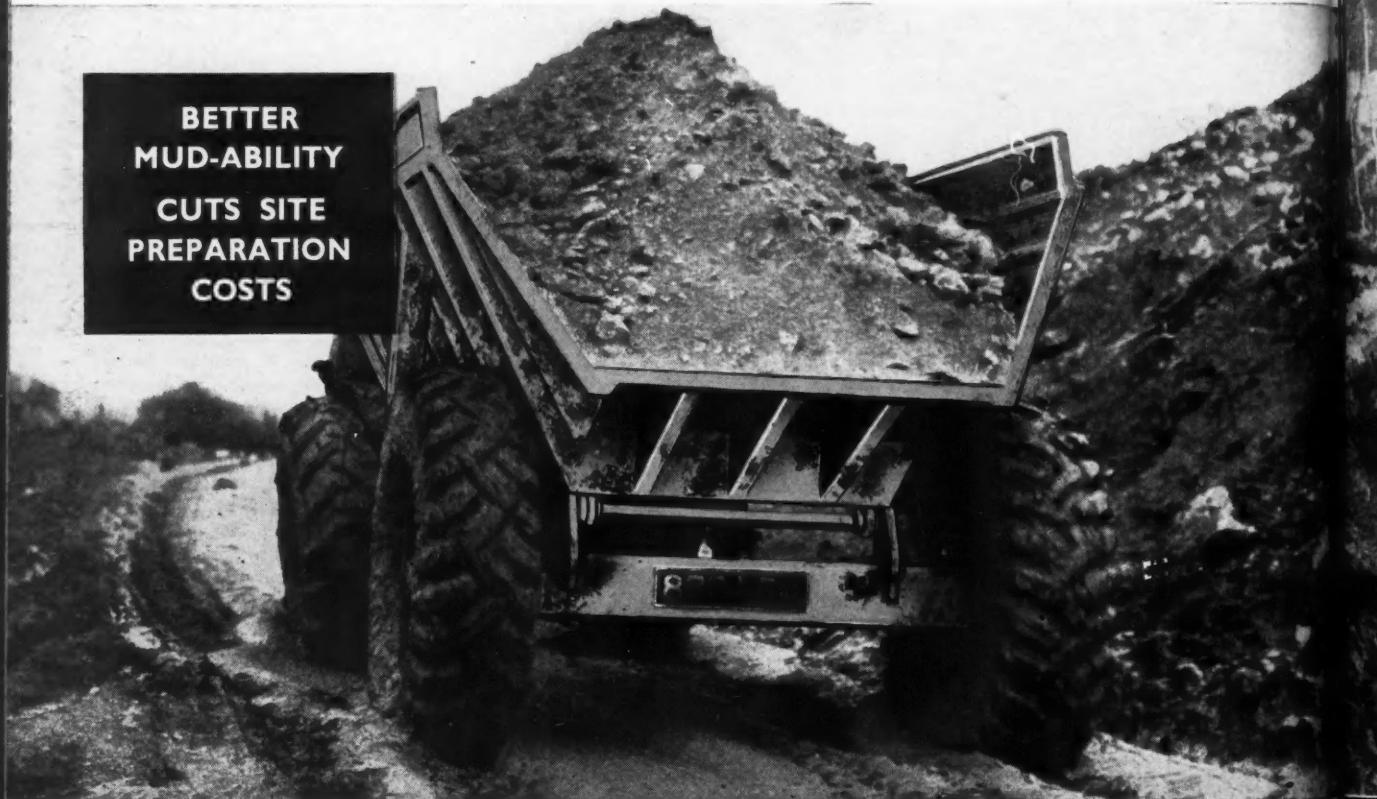
**CHASESIDE ENGINEERING COMPANY LIMITED**

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MUD-ABILITY  
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The high payload/low h.p. Shawnee Poole System cuts the cost of hauling muck by 50% . . . and the resulting saving is PROFIT. There is no simpler or more economical way of hauling muck than by the Shawnee Poole System.

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*The Shawnee Poole System is manufactured under British and Foreign Patents granted and Pending  
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BETTER  
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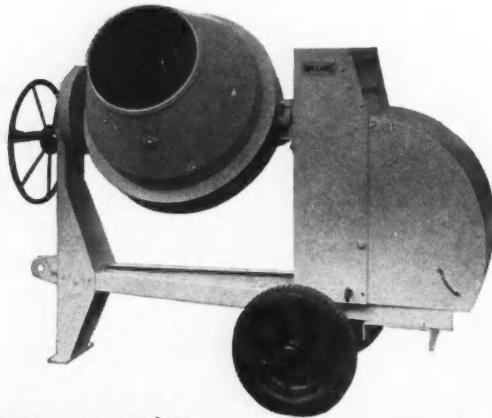


BETTER AVAILABILITY  
CUTS DOWN-TIME

**Shawnee**  
**Poole**

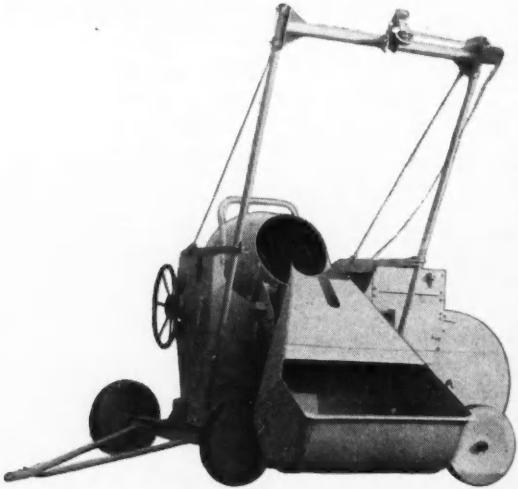
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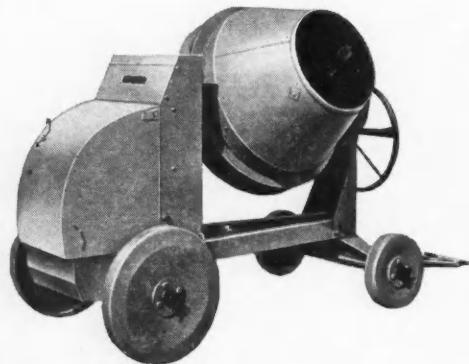


**Millars 3½T.** A sturdy and already popular machine, built to B.S.S. 1305, it has a mixed batch capacity of 3½ Cubic feet. Its chassis, whether on two wheels or four wheels, steel or pneumatic tyres, enables barrows to be wheeled in close and prevent waste through spillage. The specially shaped flats and paddles in the mixing drum give a perfectly spaded mix.

FAST TOWING MODEL NOW AVAILABLE.



**Millars 7TH.** The latest and largest of our range of tilting drum mixers, with a mixed batch capacity of 7 cubic feet. The loader bucket is hydraulically lifted and the grouped controls render operation extremely simple. The mixer is normally powered by a Diesel engine—electric motor drive can be arranged if desired. Optional extra is a Dragline Feeder controlled by a single button switch giving one man the loading power of three.



**Millars 5T.** A compact, easily manoeuvrable, hand-fed tilting drum model. The new design is strongly constructed to give rigidity and at the same time allow the barrows close access to the machine and avoid spillage. The drum is balanced and rotates on ball bearings to ensure ease of control and economy of power. The dump locking gear allows the drum to be set at any angle to suit the consistency of the mix.

FAST TOWING MODEL NOW AVAILABLE.



**Millars 7NT.** A totally enclosed machine with a batch capacity of 7 cubic feet, built to B.S.S. 1305, it is fully automatic in operation. A single lever control raises the loader bringing into operation the brake and shaker gear. The robust chassis, of all steel welded construction is mounted on four wheels, the front swivelling axle giving three point suspension. Petrol or Diesel engines are available.

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**GREAT WINCHESTER ST.**  
**LONDON E.C.2.**

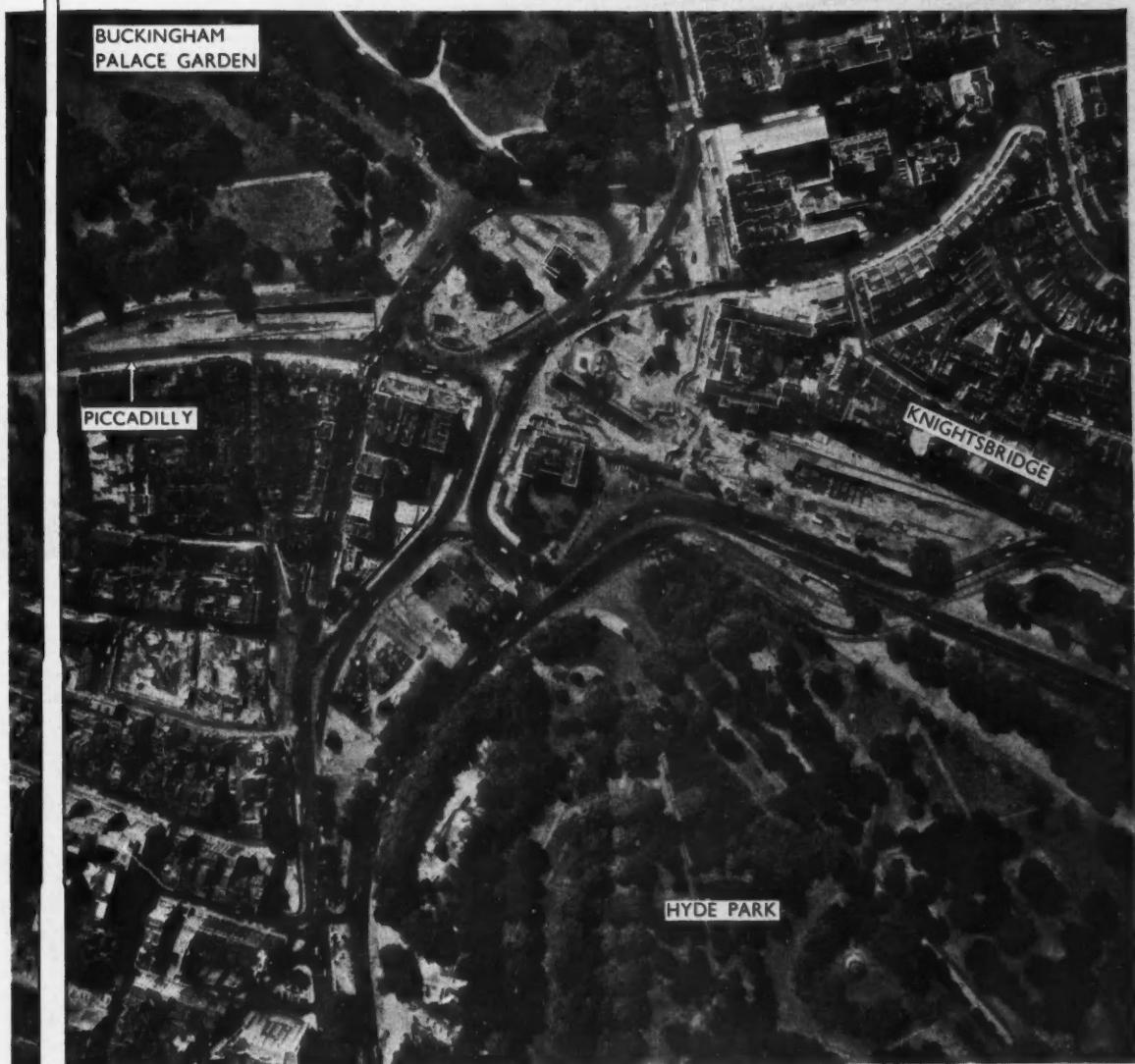
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## when the lights go up on the new HYDE PARK CORNER

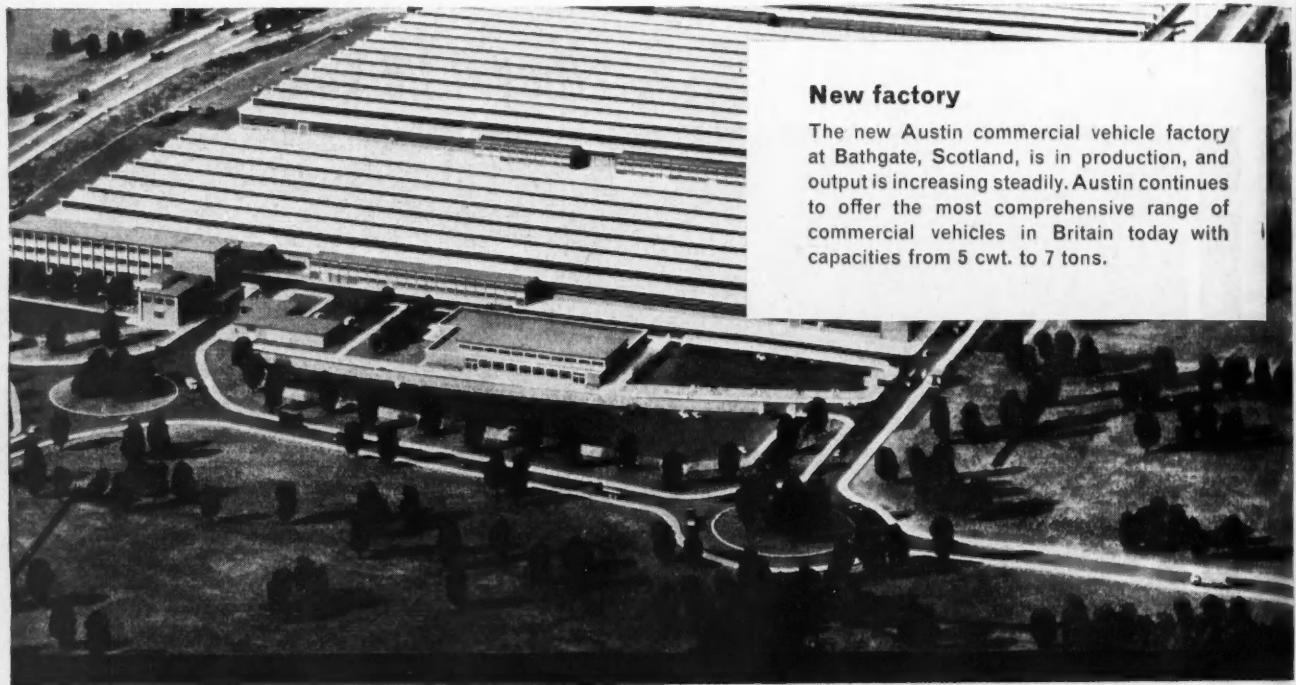
104 Atlas Mercury lanterns will provide the street lighting for the completed Hyde Park Development Scheme. These lanterns have been specifically designed to comply with the very high standards set by the London County Council and the Westminster City Council for their tremendous project. Each lantern incorporates three 400 watt MBF/U Mercury lamps with light control by a special high purity magnesium aluminium alloy reflector protected by a clear acrylic plastic cover. The lanterns will be mounted on 40 ft. tubular steel columns at spacings varying from 120 to 160 ft. The new Hyde Park Corner will be a showpiece of all that is best in road design, engineering and lighting.

*...they'll be atlas*



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# NEW FROM



## New factory

The new Austin commercial vehicle factory at Bathgate, Scotland, is in production, and output is increasing steadily. Austin continues to offer the most comprehensive range of commercial vehicles in Britain today with capacities from 5 cwt. to 7 tons.

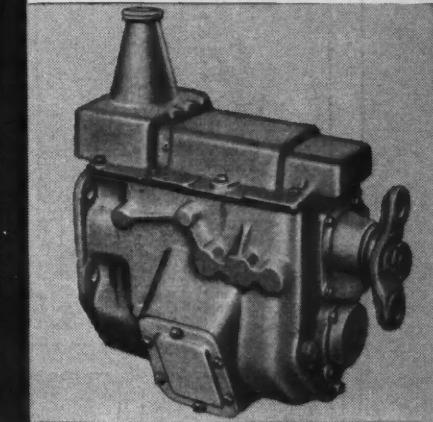
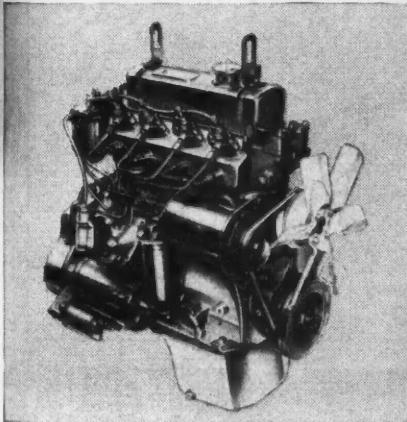
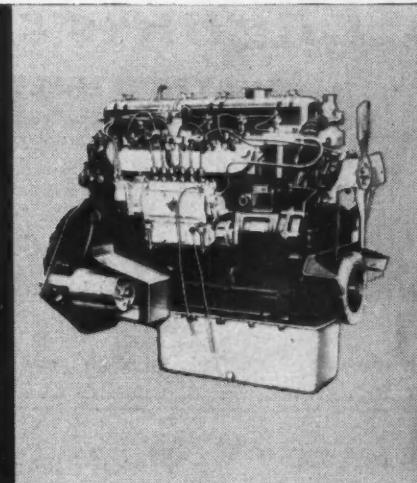


## New 5 tonner

New 5 ton, long wheel base, low loader. Fitted with the Austin 'easy access' cab (reduces driving fatigue by nearly two-thirds).

Invest in an **AUSTIN** See them on

# MAUSTIN



**New engine for the 152 and  
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Now available as an alternative to the petrol unit in all 152 and 10/12 cwt. vehicles—the powerful and economical 1.5 litre diesel unit.

**New engine for the 7 tonner**

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Another optional extra—five speed gearbox for every truck in the 5 ton range.

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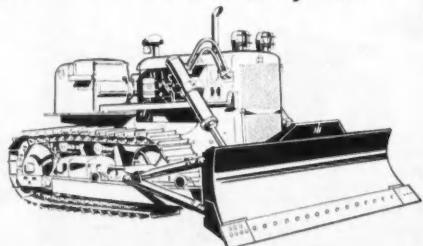
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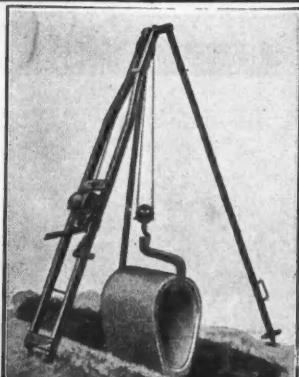
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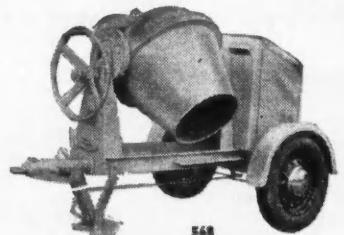
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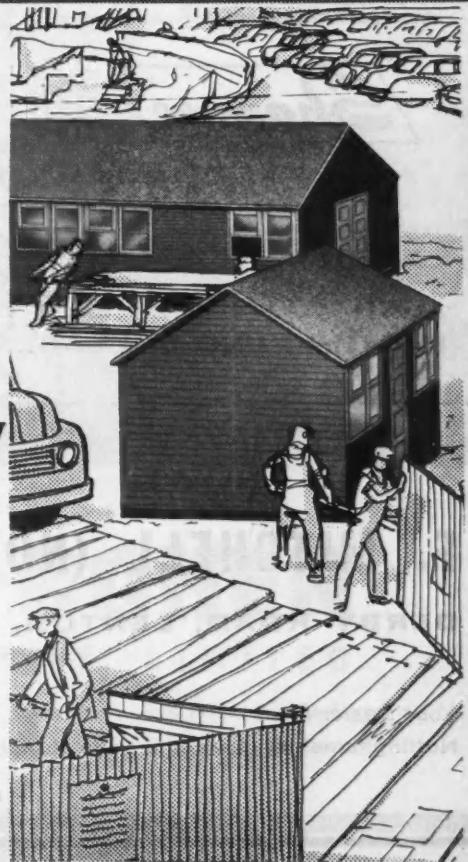
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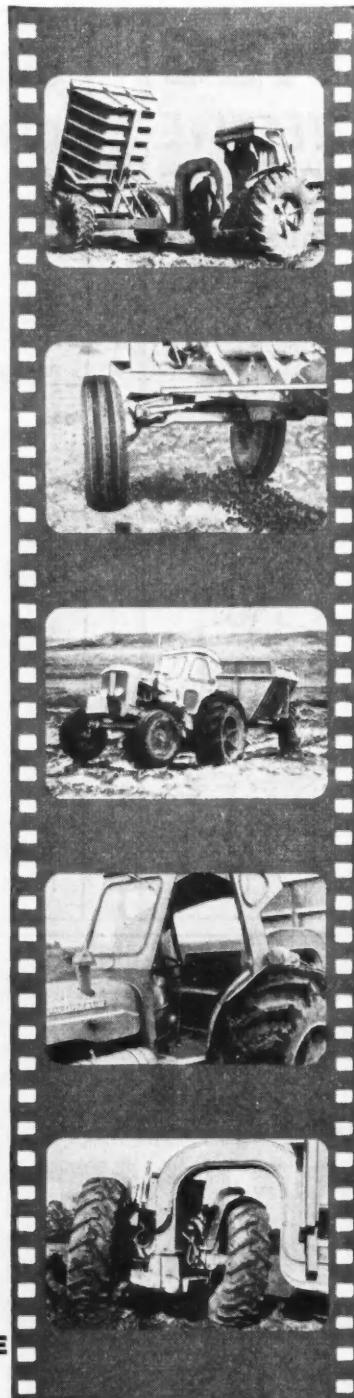
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*The Shawnee Poole System is manufactured under British and Foreign Patents granted and pending.*



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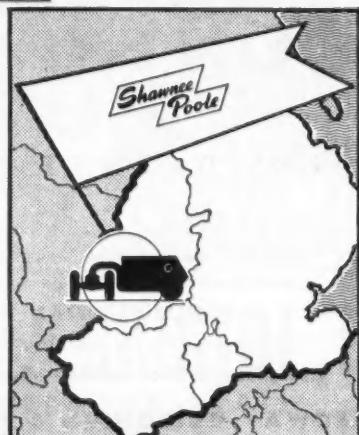
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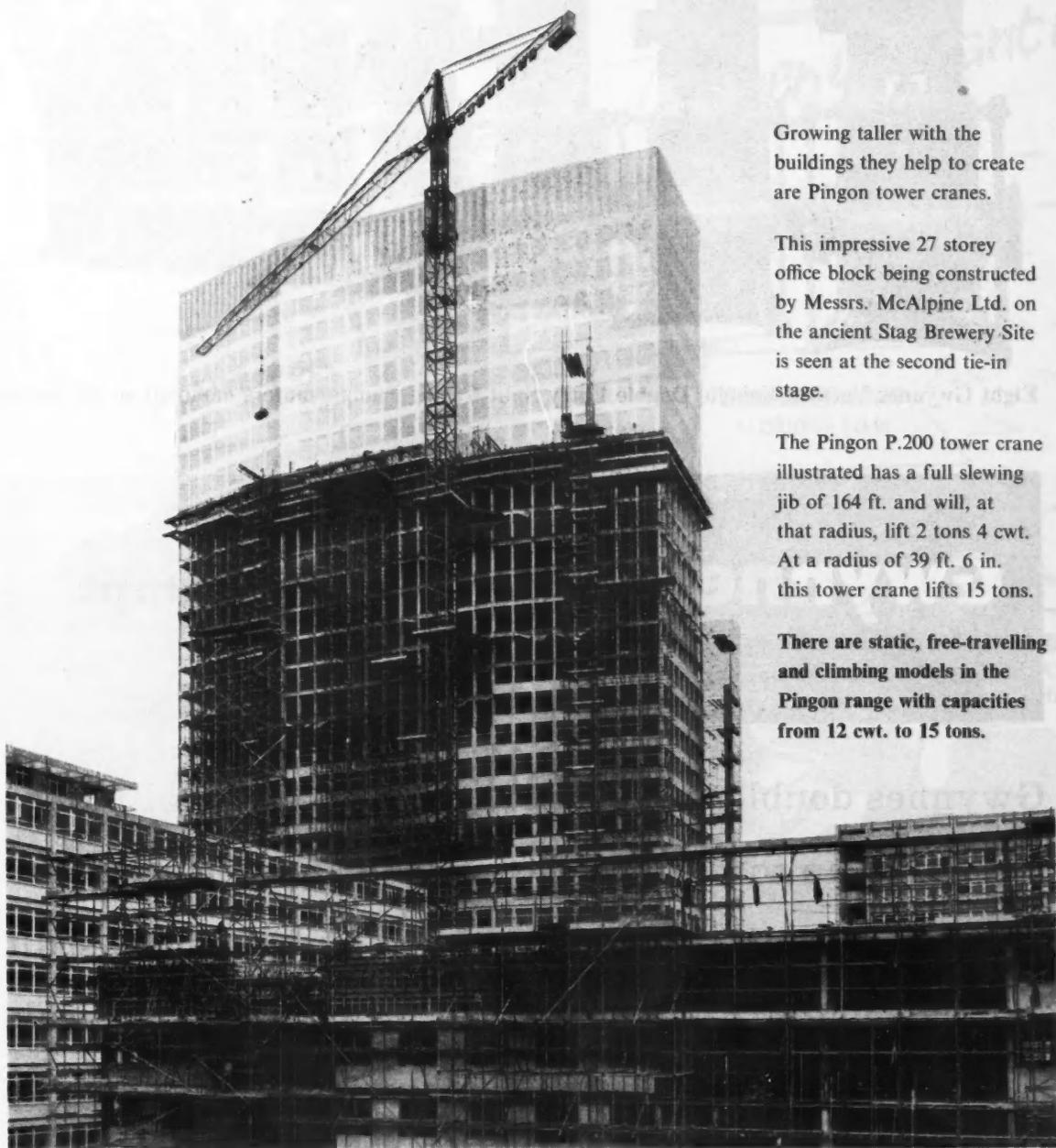
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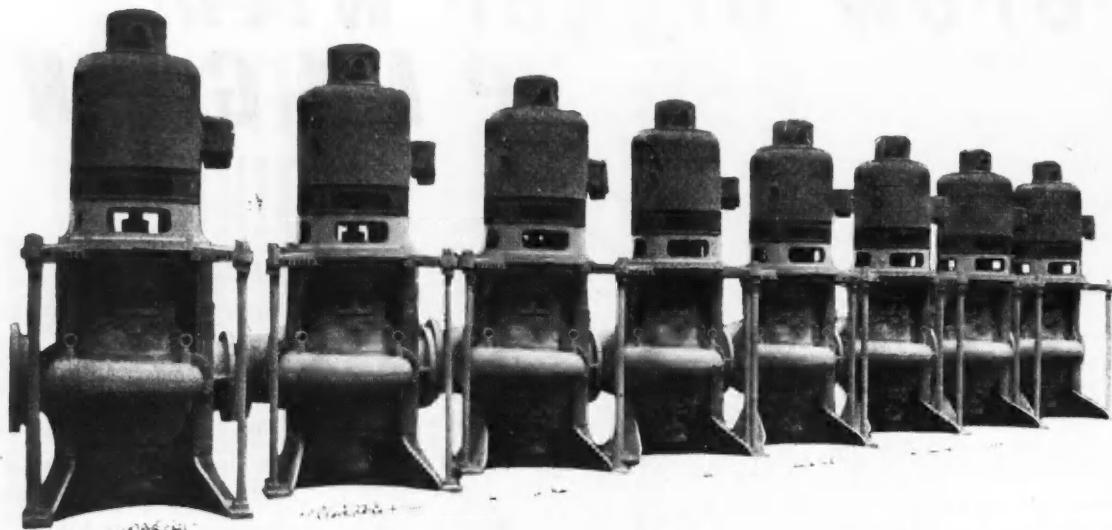
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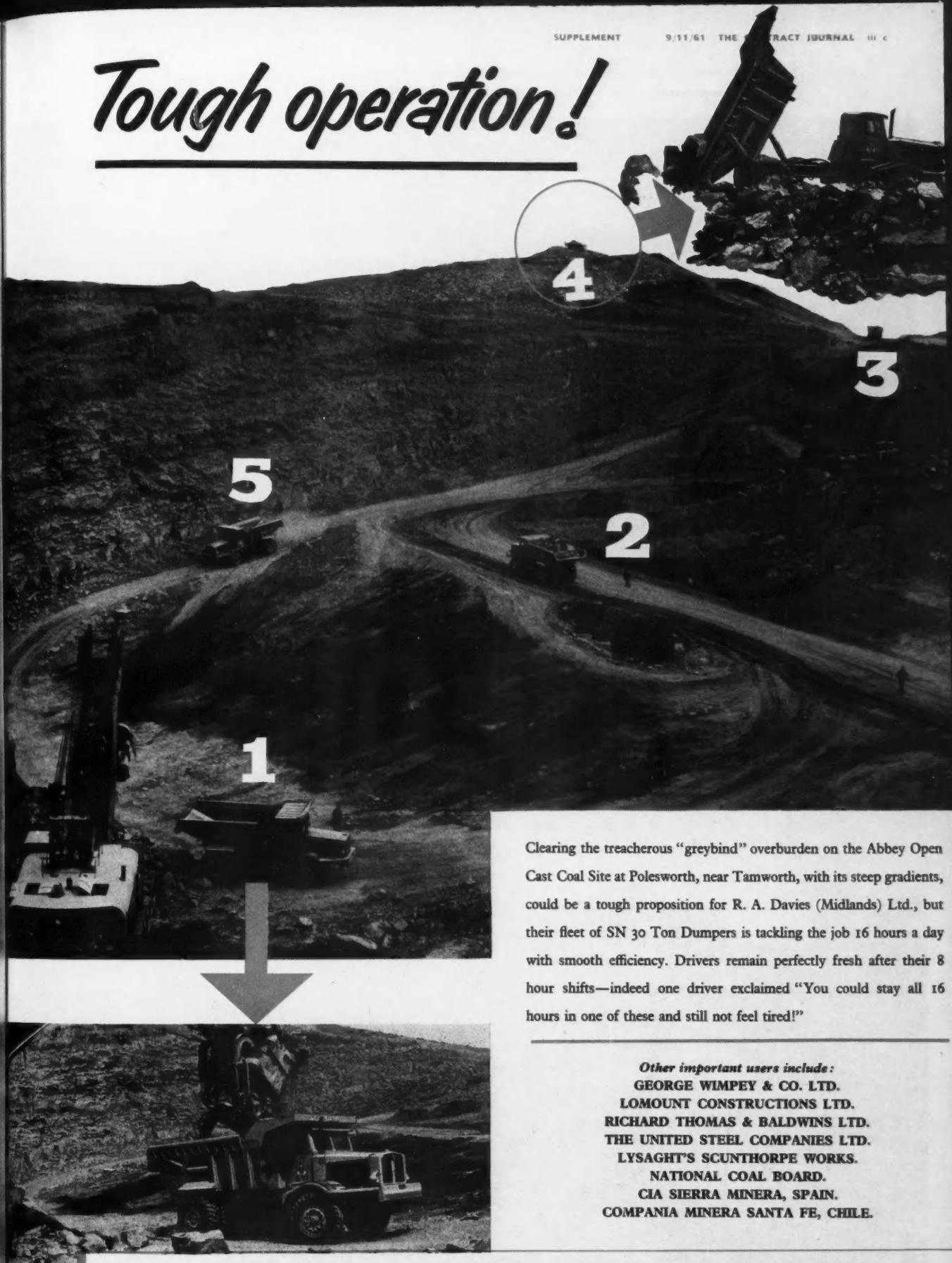
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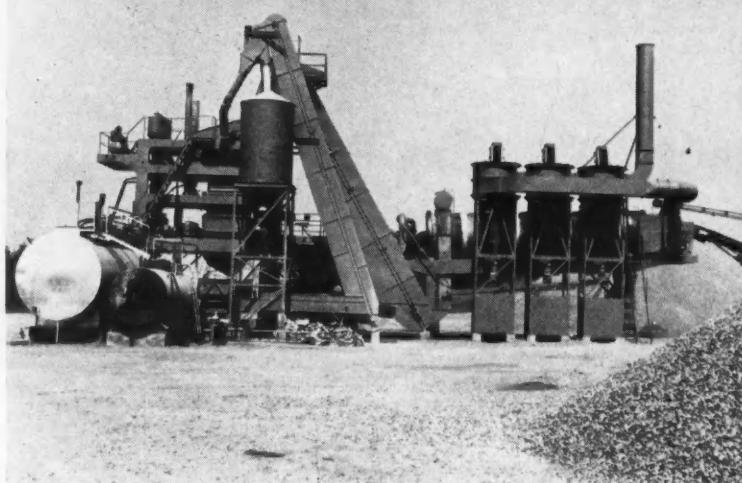
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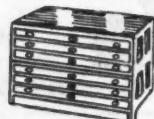
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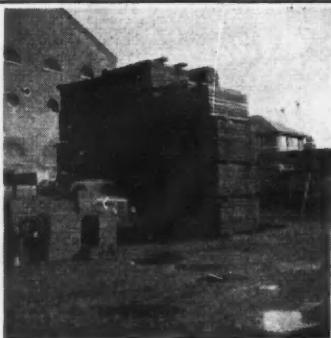
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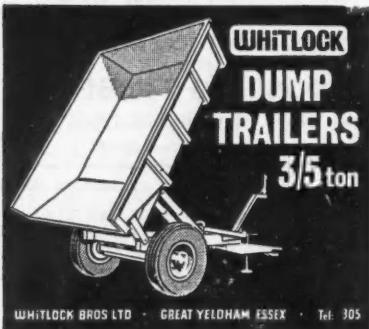
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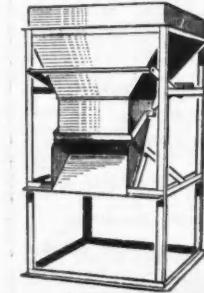
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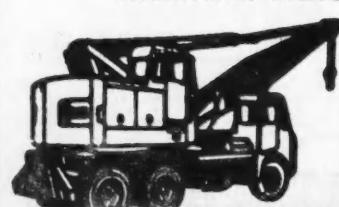
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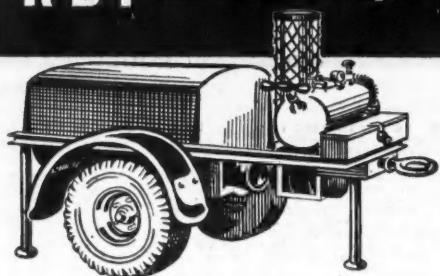
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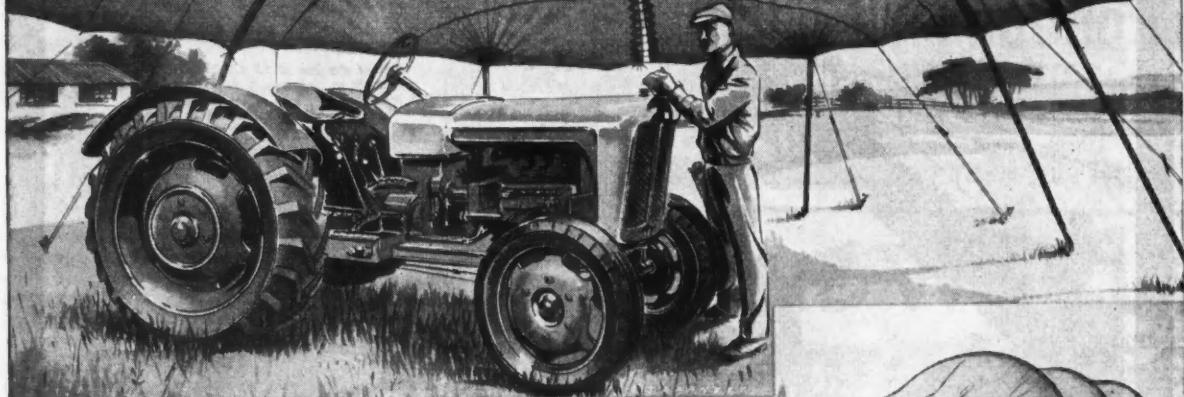
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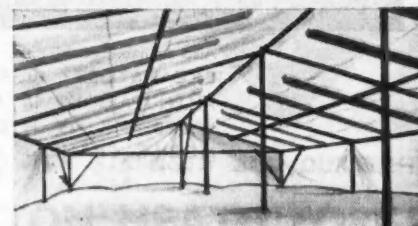
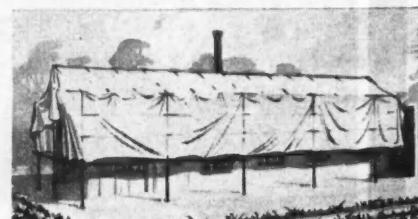
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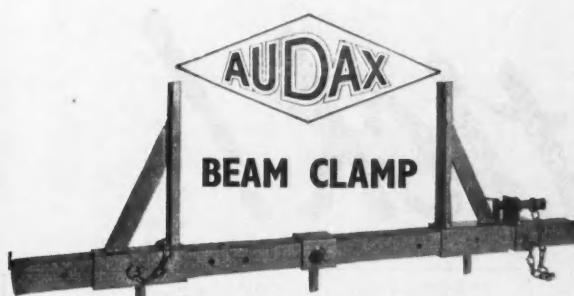
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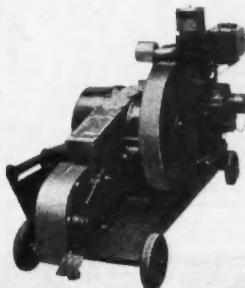
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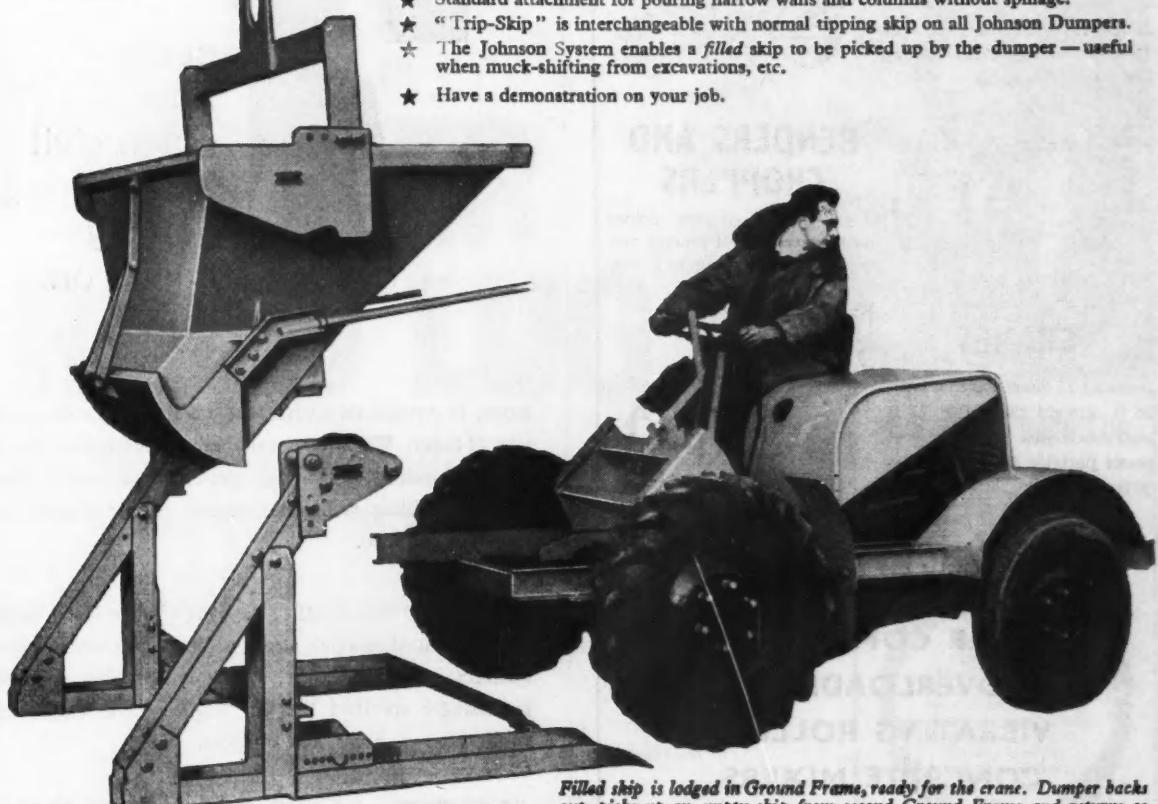
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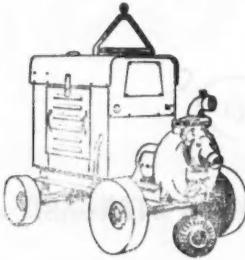
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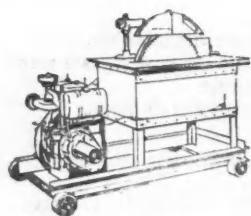
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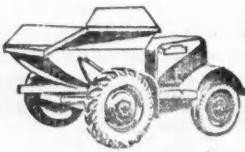
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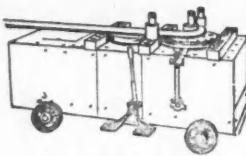
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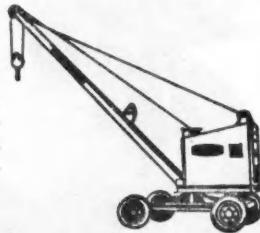
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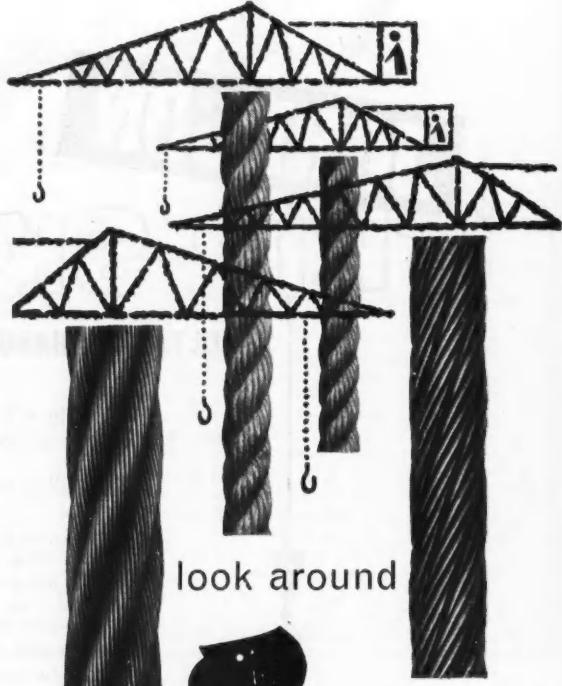
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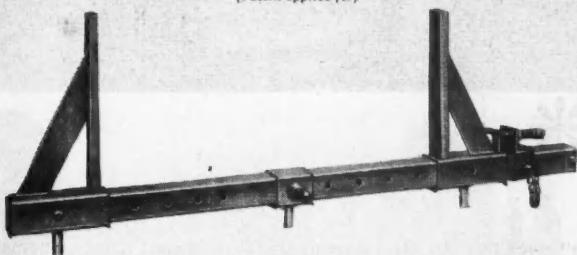
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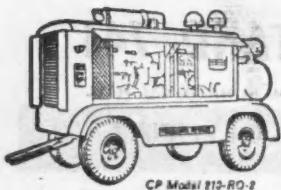
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Willow Wharf, Bridge Road, Maidenhead. Maidenhead 126

HOWARD, C.A.E.C., LTD. (Ref. 5);  
1 Tidmarsh Road, Pangbourne. Pangbourne 180

WARNER, H. F., LTD. (Ref. 5);  
Star Works, Knowl Hill, Twyford. Littlewick Green 3

**BUCKINGHAMSHIRE**

STRESSCRETE, LTD. (Ref. 1:5:6:7:8);  
Poyle Estate, Colnbrook. Colnbrook 2282/3

**CHESHIRE**

BUTLER, W. S., LTD. (Ref. 5:11);  
53 King George Street, Shotton, near Chester. Connaught's Quay 138

CHESHIRE CONCRETE CO. (Ref. 1:5:6:7:8);  
Forge Fields, Wheelock, Sandbach. Sandbach 963/4/5

**CUMBERLAND**

EDENHALL CONCRETE PRODUCTS (Ref. 1:4);  
Barbary Plains, Edenhall, Penrith. Langwathby 269

**DERBYSHIRE**

HADDON CONCRETE CO., LTD. (Ref. 1:7:8:10);  
Haddon Concrete Works, Staveley, Chesterfield. Staveley 391/2/3

MID-CRETE PRODUCTS, LTD. (Ref. 1:2:3:5:7:11);  
Rose Hill Works, Swadlincote Road, Woodville. Swadlincote 7014

**DEVONSHIRE**

WESTERN COUNTIES BRICK CO., LTD. (Ref. 14);  
Head Office—31 Queen Street, Exeter. Exeter 75388/9

Works—Crownhill Road, Honicknowle, Plymouth. Plymouth 72745/8

WOODLEY, R. J. (Ref. 1:5);  
Newton Poppleford, near Sidmouth. Colaton Raleigh 376

**ESSEX**

HEAL, J. B., LTD. (Ref. 1:5);  
Briar Concrete Works, Arterial Road, Eastwood. Eastwood 55242

NEW PROCESS BREEZE SLAB & MORTAR CO., LTD. (Ref. 1:5);  
Redbridge Works, Dovers Corner, Rainham, Essex. Rainham 5212/3

WICKFORD BREEZE CO. (Ref. 1:5);  
The Elms, Nevenden Road, Wickford. Wickford 2241

**GLoucestershire**

CONCRETE PRODUCTS (BRISTOL), LTD. (Ref. 1:2:3:4:5:6:7:8:9:11);  
Vale Lane, Bedminster, Bristol, 3. (Head Office and Works) Bristol 64888 & 61331

FAIRFORD CONCRETE PRODUCTS, LTD. (Ref. 1:3:4:5:7:11);  
Whelford Road, Fairford. Fairford 365

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Station Approach, Fleet. Fleet 1722

BELVIDERE BLOCK CO., LTD. (Ref. 1:5);  
High Street, Westend, Southampton. Westend 2475

BLANDFORD, J. J., LTD. (Ref. 1:5);  
Fair Oak Road, Eastleigh. Fair Oak 291

PORTSMOUTH TRADING CO., LTD. (Ref. 1:5:11);  
Vectis Way, High Street, Cosham. Portsmouth 76537/8

WILLS (BOURNEMOUTH), LTD. (Ref. 1:5:6:7:8);  
554 Ringwood Road, West Howe, Bournemouth. Northbourne 39

**HERTFORDSHIRE**

HEMEL HEMPSTEAD LIGHTWEIGHT CONCRETE LTD. (Ref. 5);  
Reardon Road, Hemel Hempstead. Boxmoor 5510/2

WARECRETE PRODUCTS, LTD. (Ref. 1:5:6:7:8:9:11);  
Crane Mead Works, London Road, Ware. Ware 2468/9 & HE3/4045

**HUNTINGDON**

ST. IVES SAND AND GRAVEL CO., LTD. (Ref. 1:5:10:11);  
22 The Broadway, St. Ives. St. Ives 2441/2/3/4

**ISLE OF WIGHT**

WARDER, J. (Ref. 1:5:11);  
29 Hearn Street, Newport. Newport 2679

**KENT**

ATLAS STONE CO., LTD. (Ref. 1:5:7:8:11:12);  
Stone Court Works, Greenhithe. Greenhithe 2277/8

BOURNCRETE PRODUCTS, LTD. (Ref. 1:4:5:11);  
Crown Quay Lane, Sittingbourne. Sittingbourne 3255

**KENT (continued)**

CASTLE CONCRETE CO., LTD. (Ref. 1:5);  
Head Office & Works: Tower Street, Dover. Dover 242

Works: Albion Road, St. Peter's, Broadstairs. Thanet 62986

Works: Albert Road, Deal. Deal 96

EASTRY CONCRETE PRODUCTS, LTD. (Ref. 1:5);  
Station Approach, Chilham, near Canterbury. Chilham 306

FLYNN BROS. (CONCRETE), LTD. (Ref. 1:5:7:8:9:10:11:12);  
Osterley Quarries, Rainham, Kent. Rainham 81427

IMPENRIVOUS PRODUCTS, LTD. (Ref. 1:4:5:11);  
Sturry Quarry, Sturry, near Canterbury. Sturry 355

**LANCASHIRE**

CARNFORTH CONCRETE PRODUCTS (Ref. 1:5:7);  
Scotland Road, Carnforth.

CARNFORTH, LTD. (Ref. 1:5:7:8:9:10:11:12);  
Carnforth 177 and Dent 205

JONES, DAVID, MESSRS. (Ref. 1:2:3:5);  
The Winnings, Ingleton, via Carnforth. Ingleton 313

RAINFORD, W. (Ref. 1:5);  
Eveton Valley, Liverpool. North 2472

**LEICESTERSHIRE**

HOWARD, C.A.E.C., LTD. (Ref. 5);  
Trent Lane Works, Castle Donington. Castle Donington 564

**LINCOLNSHIRE**

CONCRETE PRODUCTS, LINCOLN (Ref. 1:7:8:11);  
Dixon Street, Lincoln. Lincoln 20041

**LONDON POSTAL DISTRICT**

ATLAS STONE CO., LTD. (Ref. 1:5:7:8:11:12);  
Artillery House, Artillery Row, Westminster. S.W.1.

(Head Office) Abbey 3081

BEACHCROFT, CONCRETE PARTITIONS, LTD. (Ref. 1:5:7:8:9:10:11);  
Harrow Road, Leytonstone. E.11. Maryland 4747/9

CAWOOD WHARTON AND CO., LTD. (Ref. S.8);  
Block Works, Blackwall Lane, Greenwich. S.E.10.

Sole Selling Agent: Broad & Co., Ltd. 4 South

Abbey Wharf, Paddington. W.2. Paddington 7061 (20 lines)

COSTIN, J. AND SON (Ref. 1:5:6:7:8:9:10);  
24 George Lane, Lewisham. S.E.13.

Hither Green 1800

ELGOOD, E. J., LTD. (Ref. 1:5);  
"Insulcrete" Works, Yeoman Street, Deptford. S.E.8.

MANOR WAY BREEZE SLAB CO., LTD. (Ref. 1:5:13);  
Office: 299 Barking Road, Pistaone. E.13.

Albert Dock 6131/2

Works: 16a Star Lane. E.16. Albert Dock 3587

Works: Tulse Hill Goods Yard, Knollys Road. S.W.16.

MERTON CONCRETE, LTD. (Ref. 1:5:6:7:8:9:11);  
165 Boundary Road, Colliers Wood. S.W.19.

NORTH ENFIELD PRECAST CONCRETE CO., LTD. (Ref. 1:5:11);  
Devonshire Hill Works, White Hart Lane, Tottenham. N.17.

WILLESDEN CONCRETE, LTD. (Ref. 5);  
12 Scrubs Lane, Willesden. N.W.10. Ladbrooke 4588

**MIDDLESEX**

GREEN BROS. (WEMBLEY), LTD. (Ref. 5);  
Engineers' Way, Exhibition Grounds, Wembley.

SMITH, S. (COWLEY), LTD. (Ref. 1:5);  
Industrial Estate, Moor Farm Lane, Uxbridge. Uxbridge 3187

STRESSCRETE, LTD. (Ref. 1:5:6:7:8);  
Poyles Estate, Colnbrook. Colnbrook 2282/3

**NORFOLK**

ARTHURTON BROS. (Ref. 1:5:11);  
192 Oak Street, Norwich. Norwich 26443

DRAYTON STONE PITS, LTD. (Ref. 1:5:7:11);  
Central Road, Cromer. Cromer 2264

MID-NORFOLK CONCRETE CO., LTD. (Ref. 1:5:7:11:13);  
Minorco Works, Yaxham Road, Dereham. Dereham 431

PRECASTERS, LTD. (Ref. 1:5:9:10:11);  
Progress House, Church Road, Gorleston-on-Sea. Gorleston 44

**NORTHAMPTONSHIRE**

HOWARD, C.A.E.C., LTD. (Ref. 5);  
Nunn Mills Road, Northampton. Northampton 4875

**NORTHUMBERLAND**

CONCRETE PRODUCTS (NEWBURN), LTD. (Ref. 1:5:7:11);  
Sandhills, Newburn, Newcastle upon Tyne. S. Newcastle 67430

**NOTTINGHAMSHIRE**

BROWN, SIDNEY (PLASTERERS, WORKSPACES), LTD. (Ref. 1:5:7);  
70-76 Lowtown Street, Worksop. Worksop 2361

EVERS, R. A. (Ref. 1:5:7:11);  
"Everstone," Hillside, Bakestone Moor, Worksop.

HOWARD, C.A.E.C., LTD. (Ref. 5);  
Howell Lane, Newark. Newark 3061

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CONCRETE PRODUCTS (BRISTOL), LTD. (Ref. 1:2:3:4:5:6:7:8:9:11);  
Broadway, Chilcompton, near Bath.

Stratton-on-the-Fosse 384

**SOMERSET (continued)**

USHER, A. E., & SONS (Ref. 1:5:11);  
Winterstoke Road, Weston-super-Mare. Weston 2945

**STAFFORDSHIRE**

HOWARD, C.A.E.C., LTD. (Ref. 5);  
Hawkes Green Lane, Phoenix Road, Cannock. Cannock 3036

MID-CRETE PRODUCTS, LTD (Ref. 1:2:3:5:7:11);  
Swadlincote Road, Woodville, near Burton-on-Trent. Swadlincote 7014

STAFFORD CONCRETE PRODUCTS, LTD. (Ref. 1:5:7:8);  
Rickerscote Road, Stafford. Stafford 2384/5

**SUFFOLK**

GAYFER, J., (CONCRETE), LTD. (Ref. 1:5:7:11);  
Dobbs Lane, Kesgrave, Ipswich. Kesgrave 302/3

**SURREY**

PRECAST BUILDING PRODUCTS CO., LTD. (Ref. 1:5:6:7);  
Oak Lane, Claygate. Claygate 3731

WELLING, C. & SONS, LTD. (Ref. 1:5);  
Garlands Road, Leatherhead. Leatherhead 3018/9, 3663

**SUSSEX**

ATLAS STONE CO., LTD. (Ref. 1:5:7:8:11:12);  
Harbour Lane, Rye. Rye 2277

COLE, S. W., & SONS (Ref. 1:5);  
Boognor Bridge, Chichester. Chichester 3550

DAVEY, SAM., LTD. (Ref. 1:5:6:7);  
Office: 2 Argyle Villas, Brighton. Brighton 25519

Works: Plumpton Lane, Plumpton Green. Plumpton 259

HEAVER, JOHN, LTD. (Ref. 1);  
Shopwyke Road, Chichester. Chichester 4545/6

**WARWICKSHIRE**

LOCKTON BROTHERS (Ref. 5);  
Swan Lane, Coventry. Coventry 40680

**WILTSHIRE**

FAIRFORD CONCRETE PRODUCTS, LTD. (Ref. 1:3:4:5:7:11);  
Wootton Bassett, Swindon. (Regd. Office) Wootton Bassett 391/2/3/4/5

**YORKSHIRE**

BROOME BROTHERS (Ref. 5);  
York Road, Doncaster. Doncaster 61733

GARFORTH BREEZE SLAB & CONCRETE CO., LTD. (Ref. 1:5);  
Trench Works, Ninehills Lane, Garforth. Garforth 2982

HADDON CONCRETE CO., LTD. (Ref. 1:5:7:8:10);  
Dronfield, near Sheffield. (Regd. Office) Dronfield 2204

LISCRETE, LTD. (Ref. 1:4:7:11);  
Brooklyn Chambers, 19 Thorne Road, Doncaster.

Works: High Common Lane, Tickhill. Tickhill 227

LONGLEY, C. R. & CO., LTD. (Ref. 1:5:6:7:8:9:10:11);  
Ravensthorpe Road, Thornhill Lane, Dewsbury. Dewsbury 4055/6

STOCKS BROS. (BREEZE SLABS), LTD. (Ref. 1:5:7:11);  
368 York Road, Leeds. Leeds 2-3396

UNITED BREEZE SLAB & CONCRETE CO. (Ref. 1:5);  
Bridge Road, Holbeck Lane, Leeds. Leeds 11. Leeds 2-4399

VIBROCRETE (MEXBOROUGH), LTD. (Ref. 1:2:3:5:7:8);  
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Craig-Yr-Hesg Quarries, Pontypridd. Pontypridd 2108

HUCON, LTD. (Ref. 1:5);  
Head Office: Quarryfields, Ruthin, Denbighshire. Ruthin 493

Block Works: Delph Works, Acrefair, near Wrexham. Ruabon 2397

PRESTATYN PRECAST CONCRETE CO., LTD. (Ref. 1:2:3:4:5:7:8:10:11);  
Marine Road East, Prestatyn. Prestatyn 2921/2

REES CONCRETE PRODUCTS, LTD. (Ref. 1:5);  
Pantglas, Aberfan, Merthyr Vale, Glamorgan. Ynysfaen 221

WILLOW CONCRETE WORKS (Ref. 5:7);  
Buckley, near Chester. Buckley 434

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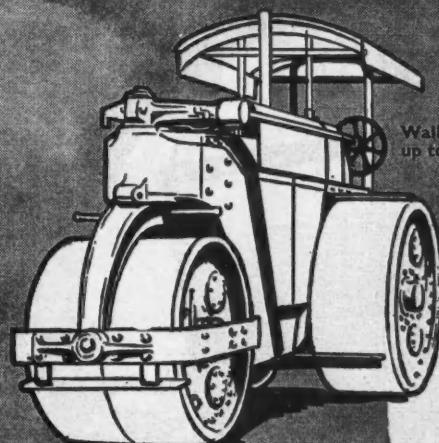
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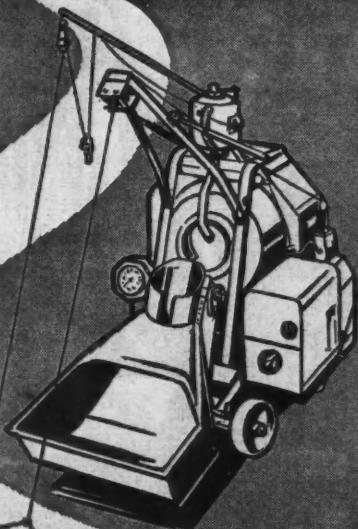
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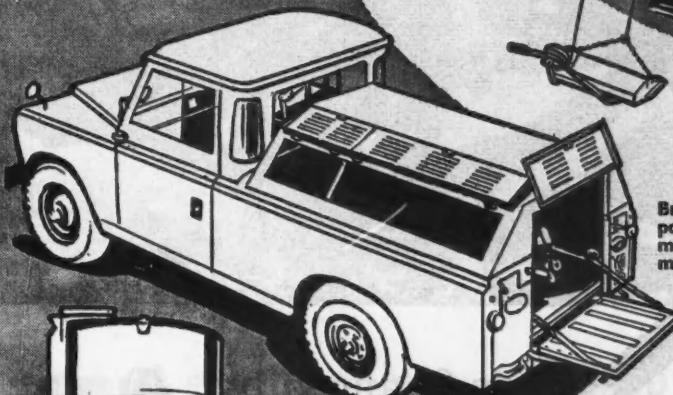
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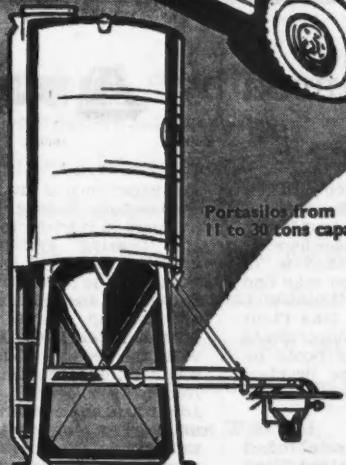
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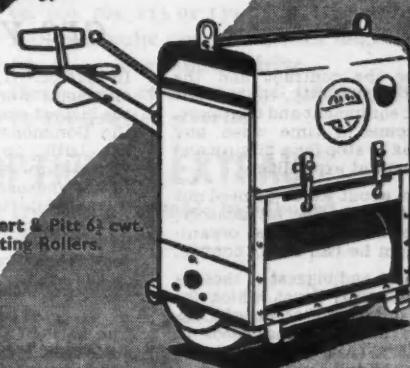
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## CONTRACTS

INDUS BASIN PROJECT.  
WATER AND POWER DEVELOPMENT AUTHORITY.

## ADVANCE NOTICE OF INTENT TO INVITE TENDERS FOR THE CONSTRUCTION OF CANALS AND APPURTENANT WORKS.

The above Authority is undertaking the construction of a number of large Canals. West Pakistan. Their construction is being financed through the Indus Basin Development Fund, the operation of which will be administered by the International Bank for Reconstruction and Development (World Bank). The canals, which form a part of the works embodied in the Indus Basin Project, will have a total length of about 390 miles and involve approx. 345 million cu. yd. of excavation, as well as the construction of several hundred bridges and other canal structures. The work will be divided into eight or more individual projects. Prospective contractors invited to tender on the first three canals have either already been selected or are being prequalified by action presently under way.

The fourth Link Canal to be undertaken will be the Qadirabad-Balokhi Link Canal. This canal will extend from Qadirabad on the Chenab River to Balokhi on the Ravi River and have a total length of approximately 20 miles. It will require a feeder canal of about 18,600 cu. ft. per second for the first 17 miles and 14,500 cu. ft. per second thereafter. The feeder canal will have a capacity of 4,100 cu. ft. per second. The canals together will involve approx. 95 million cu. yd. of excavation, of which will be wet, and the construction of some 100 structures such as regulators, bridges, aqueducts and siphons.

The next canal to be constructed in the same area will be the Rasul-Qadirabad Link Canal which will extend from Rasul on the Jhelum River to Qadirabad on the Chenab River. This link will have a capacity of 19,000 cu. ft. per second throughout and a length of about 28 miles. Its construction will involve approx. 40 million cu. yd. of excavation, over half of which will be wet, and the construction of some 35 structures such as regulator, bridges, aqueducts and siphons.

The Authority plans to call for TENDERS for the CONSTRUCTION of the QADIRABAD-BALOKHI LINK in the Spring of 1962, and for the CONSTRUCTION of the RASUL-QADIRABAD LINK in the Autumn of 1962. Only contractors who have been prequalified by the Authority will be invited to submit Tenders. For this purpose contractors who wish their names to be included on a list to receive the document for prequalification are requested to submit the following information on or before 15th DECEMBER, 1961, to the Authority's Consultants, TIPTON AND KALMBACH INC., at Post Office Box 289, Lahore, West Pakistan or a copy from their office at 831-14th Street, Denver 2, Colorado, U.S.A.:

- (1) Name or company or firm, with full address.
- (2) Name and title of person to whom future correspondence should be addressed.

The interested contractors will then be furnished with documents describing the work, and setting forth the information required from them by the Authority in order to evaluate their qualifications for undertaking the proposed canal construction.

## PROJECT DIRECTOR (LINKS).

West Pakistan Water and Power Development Authority.

## EAST SUFFOLK COUNTY COUNCIL.

TENDERS are invited for HEATING and PLANING approx. 9,000 sq. yd., SURFACING with 7-in. BITUMINOUS MACADAM approx 14,000 sq. yd.; BALANCING and SURFACING with ASPHALT approx. 10,500 sq. yd., HALSWORTH, BECCLES, ST. OLAVES, FRAMLINGHAM, WOODBRIDGE. (Contract No. 49.) Documents from COUNTY SURVEYOR, County Hall, Ipswich.

## FRINTON AND WALTON URBAN DISTRICT COUNCIL.

## MAIN INTERCEPTING SEWERS FOR WALTON AND THE NAZE.

## CONTRACT NO. 1.

The Council invite TENDERS on a Fixed-price Basis from experienced civil engineering contractors for the CONSTRUCTION of MAIN INTERCEPTING SEWERS comprising about 1,000 ft. of Extra-Strength Reinforced Spun Granite Concrete Pipes fitted with Cornelius Flexible Joints, 45in., 30in., 27in., 24in., 21in., 15in. and 12in. in dia. together with Concrete Manholes, and other incidental works.

The Contract will be subject to the I.C.E. Conditions of Contract, and copies of the Form of Tender, Specifications, Bills of Quantities and the Drawings may be obtained from the Engineers, MESSRS. WILLCOX, RAIKES AND MARSHALL, 33 Great Charles Street, Birmingham, 3, on and after 25th October, 1961, on payment to them of a deposit of five Guineas by cheque drawn in favour of the Council, which will be refunded on receipt of a bona-fide Tender and the return of all documents and drawings supplied to them.

Tenders, on the form supplied, are to be delivered to the undersigned, in the envelope provided, not later than 12 o'clock Noon on MONDAY, the 27th of November, 1961, together with a covering letter giving particulars of works of a similar nature recently carried out, the cost, and the names of the Engineers responsible.

The Council do not bind themselves to accept the lowest or any Tender.

(Signed) J. P. McLAIRNEY,  
Clerk of the Council.

The Council House,  
Frinton-on-Sea,  
Essex.

26th October, 1961.

## URBAN DISTRICT COUNCIL OF BISHOP AUCKLAND.

## CONVERSIONS TO WATER CARRIAGE SYSTEM—212 CONVERSIONS IN THE URBAN DISTRICT.

TENDERS are invited for 212 CONVERSIONS from the conservancy system to the WATER CARRIAGE SYSTEM at the FOLLOWING PLACES, namely, Edlon Lane; Coronation; South Church, Leeholme, and Newfield.

Specification, Schedule of Works and Form of Tender may be obtained from F. McLELLAN and Son, 10 Newfield, Bishop Auckland, on payment of a deposit of One Guinea which will be refunded upon receipt of a bona-fide Tender.

Sealed Tenders, in the envelope provided, must be delivered to the undersigned not later than Noon on MONDAY, 27th November, 1961.

The Council do not bind themselves to accept the lowest or any Tender.

J. R. PASSEY,  
Clerk of the Council.

Old Bank Chambers,  
Market Place,  
Bishop Auckland.

31st October, 1961.

## CONTRACTS

BEDFORDSHIRE COUNTY COUNCIL.  
LONDON-YORKSHIRE MOTORWAY, M.1.

TENDERS are invited for the ERECTION of 4,000ft. of FLEXBEAM GIRD RAIL on the Bridge Approaches on the M.1 in Bedfordshire.

Copies of the Conditions of Contract, Specification and Bill of Quantities can be obtained from the County Surveyor, Dents Road, Bedford, on payment of Two Pounds deposit, which will be refunded on receipt of a bona-fide Tender.

Tenders must be returned to me by FRIDAY, 24th November, 1961.

The Council do not bind themselves to accept the lowest or any Tender which may be received.

GEORGE BREWIS,  
Clerk of the County Council.

Shire Hall,  
Bedford.  
October, 1961.

## COUNTY BOROUGH OF CROYDON.

## NOTICE TO BUILDERS.

Contractors who have the organisation and labour force to carry out the work expeditiously, and wish to TENDER for the ERECTION of ONE-BEDROOM MAISONNETTES in Three 4-storey Blocks at BEDWARDINE ROAD, Upper Norwood, should send their names to the Borough Engineer, Town Hall, Croydon, for Bills of Quantities.

Closing date for Tenders: 13th DECEMBER, 1961.  
E. TABNER,

Town Clerk.

ATCHAM RURAL DISTRICT COUNCIL.  
AMENDED ADVERTISEMENT.

## PIMHILL WATER SUPPLY EXTENSIONS.

TENDERS are invited for the PROVISION, LAYING and JOINTING of 24 miles of SPUN-IRON WATER MAINS, of 9in. dia., together with Fittings, Cable, and ancillary works.

Tender documents may be obtained from the Office of J. R. SOCKETT, M.B.E., M.I.Mun.E., Engineer and Surveyor to the Council, 24 St. John's Hill, Shrewsbury. Applications for Tender documents must be accompanied by a deposit of £5 which will be returned on receipt of a bona-fide Tender not later than Noon on FRIDAY, 8th December, 1961.

The Council does not bind itself to accept the lowest or any Tender.

W. T. BROWN,  
Clerk of the Council.

24 St. John's Hill,  
Shrewsbury.  
20th October, 1961.

## ATCHAM RURAL DISTRICT COUNCIL.

## PIMHILL AND EAST ATCHAM WATER SUPPLY

## CONSTRUCTION OF TWO 200,000-GALLON SERVICE RESERVOIRS.

TENDERS are invited from contractors experienced in the type of work concerned, for the CONSTRUCTION of 200,000-GALLON REINFORCED CONCRETE COVERED SERVICE RESERVOIRS, and ancillary works.

Tender documents may be obtained from the Offices of J. R. SOCKETT, M.B.E., M.I.Mun.E., Engineer and Surveyor to the Council, 24 St. John's Hill, Shrewsbury. Applications for Tender documents must be accompanied by a deposit of £2 which will be returned on receipt of a bona-fide Tender not later than Noon on FRIDAY, 8th December, 1961.

The Council does not bind itself to accept the lowest or any Tender.

W. T. BROWN,  
Clerk of the Council.

Council Offices,  
24 St. John's Hill,  
Shrewsbury.

## CHELTENHAM AND GLOUCESTER JOINT WATER BOARD.

## NEW PUMPHOUSE AND INTAKE—TEWKESBURY.

The Cheltenham and Gloucester Joint Water Board invite TENDERS for the CONSTRUCTION of a NEW PUMPHOUSE and RIVER INTAKE at MYTHE WATERWORKS, Tewkesbury.

The work comprises Excavation in Soft Strata in the area of the new Pumphouse, Reinforced Concrete Work for the Intake and Pumphouse for three low lift pumps and three high lift pumps, General Building Work for the R.C. framed Pumphouse Superstructure and Amenities Block, and the Laying of Associated Water Mains and Drains. The Consulting Engineer for the design of the works are L. G. MOUCHEL AND PARTNERS.

Contract documents and Drawings may be obtained from the Joint Engineer, Municipal Offices, Cheltenham, on payment of a deposit of £10 by cheque made payable to the Board. The deposit will be returned if a bona-fide Tender is submitted and not subsequently withdrawn.

Tenders should be sent in a plain sealed envelope endorsed "Tender for New Pumphouse and Intake—Tewkesbury," addressed to the CLERK, Cheltenham and Gloucester Joint Water Board, P.O. Box No. 12, Municipal Offices, Cheltenham, to arrive not later than Midday on TUESDAY, 28th November, 1961.

The Board does not bind itself to accept the lowest or any Tender.

(Signed) C. BAKER,  
Clerk of the Board.

26th October, 1961.

## MID-GLAMORGAN WATER BOARD.

## MIDDLE LEVEL SERVICE RESERVOIR.

## COURT COLMAN, NEAR BRIDGEND.

TENDERS are invited from suitably experienced contractors for the CONSTRUCTION of a 3 million-gallon capacity MASS CONCRETE SERVICE RESERVOIR, with Reinforced Concrete Roof, together with the Construction of Valve House, certain auxiliary Reinforced Concrete Chambers, and other ancillary works.

Tender documents may be obtained from the Board's Consulting Engineer, MESSRS. THOMAS COOPER AND PARTNERS, 23 Gellifawr Road, Pontypridd, on payment of a deposit of £5 which will be refunded on receipt of a bona-fide Tender not subsequently withdrawn, and the return of all documents.

Drawings may be inspected at the Offices of the Board, and those of the Consulting Engineer at any time during normal office hours.

Tenders, in a plain sealed envelope endorsed "Middle Level Service Reservoir," are to be delivered to the undersigned by Noon on WEDNESDAY, 6th December, 1961.

The Board does not bind themselves to accept the lowest or any Tender.

C. BAKER,  
Clerk of the Board.

Mid-Glamorgan Water Board,  
8 Wyndham Street,  
Bridgend.

## CONTRACTS

COUNTY BOROUGH OF OLDHAM.  
HOUSING COMMITTEE.

## FITTON HILL ESTATE EXTENSION.

120 ONE-BEDROOM THREE-STORY FLATS;  
EIGHT BRICK GARAGES.

The Housing Committee are prepared to receive FIXED-PRICE TENDERS for the ERECTION of 120 PERMANENT ONE-BEDROOM THREE-STORY FLATS in 10 Blocks each of 12 Flats, and EIGHT BRICK GARAGES on the Extension to the Fitton Hill Estate, from firms experienced in the execution of such contracts.

Drawings may be obtained, and Bills of Quantities, Forms of Tender and General Conditions may be obtained from MESSRS. CAMERON AND MIDDLETON, F.A.R.I.C.S., Chartered Quantity Surveyors, 1 Mumps, Oldham, on payment of a deposit of Two Guineas which will be returned on receipt of a bona-fide Tender not subsequently withdrawn. Cheques, etc., to be crossed and made payable to the Borough Treasurer, Oldham Corporation. The Bills of Quantities will be available on and after Monday, 13th November.

Tenders will only be considered if they are submitted in the envelope provided, sealed and delivered not later than 10 a.m. on MONDAY, 12th December, 1961.

The Corporation do not bind themselves to accept the lowest or any Tender. The Contract will be subject to the Standing Orders of the Council, which include a requirement, in this case, for the provision of Suresites.

EDWARD HAINES,  
Town Clerk.

## BOROUGH OF REIGATE.

ONE BLOCK OF SIX ONE-BEDROOM FLATS  
AND SIX STORES, "TAISBORD," LONDON ROAD,  
REIGATE.

FIXED PRICE TENDERS are invited for One Block of Six ONE-BEDROOM FLATS, Type OP/61, and SIX STORES at "TAISBORD," LONDON ROAD, Reigate, based upon Bills of Quantities for substructure and site works, subject to remeasurement at work proceeds, and upon lump sum for superstructure of the dwellings based upon Specification and Detailed Plans.

Form of Tender, Specification, Bills of Quantities and Plans obtainable from the Borough Engineer and Surveyor of Town Hall, Reigate, on payment of a deposit of £25, refundable upon the submission of a bona-fide Tender or the return of all plans and documents.

Signed Tenders, in the envelope provided and endorsed "Tender for Six Flats, and Six Stores, 'Taisbord,' London Road, Reigate," must be returned to the undersigned not later than Noon on THURSDAY, 23rd November, 1961.

HEBER DAVIES,  
Town Clerk.

Town Hall,  
Reigate.  
October, 1961.

## BOROUGH OF PUOLE.

## CONTRACT NO. 7—BROADSTONE SEWAGE WORKS.

TENDERS are invited for the Stage III EXTENSIONS to this SEWAGE WORKS.

The work will comprise Construction of five Reinforced Concrete Sewerage Tanks, Sludge Drying Beds, Pipelines, Roadways, and associated works.

Tendering documents will be available from the Consulting Engineers, J. D. AND D. M. WATSON, M.M.I.C.E., 67 Tufton Street, London, S.W.1, early in November.

A sum of one chesee of Ten Guineas to be made payable to the Borough of Poole.

Tenders to be submitted to the undersigned not later than Noon on WEDNESDAY, 13th December, 1961.

J. G. HILLIER,  
Town Clerk.

## CITY OF STOKE - ON - TRENT.

## HIGHWAYS ACT, 1959.

## MAKING-UP OF PRIVATE STREETS.

EDEN GROVE, ETC., MEIR—  
SCHEME NOS. 30 TO 32, INCLUSIVE.

The Corporation invite TENDERS for the MAKING-UP of the ABOVE STREETS.

Drawings and Conditions of Contract may be seen, and Bills of Quantities and Specification obtained, from the City Surveyor's Department, Town Hall, Stoke-on-Trent, on payment of £1 which will be returned on receipt of a bona-fide Tender.

Tenders and priced Bills of Quantities must be delivered to the Town Clerk, Town Hall, Stoke-on-Trent, in the separate envelopes provided, not later than 12 Noon on WEDNESDAY, 15th November, 1961.

Town Clerk.  
HARRY TAYLOR.

## CITY OF STOKE - ON - TRENT.

## RECONSTRUCTION OF BURSLIM HIGH LEVEL SEWER CANAL CROSSING.

The CORPORATION invite TENDERS from civil engineering contractors for CARRYING OUT WORKS on the ABOVE SEWERAGE SCHEME.

The works comprise approx. 2170 sq. yd. of Steel Sheet Piling in Coffer dams, the Construction of a Concrete Culvert 11ft. 6in. wide and 3ft. high, with approx. 700 cu. yd. of 36in. Iron Pipe suspended within the Culvert, and other incidental works.

Drawings and Conditions of Contract may be seen, and Specification, Bills of Quantities, etc., obtained, from the City Engineer and Surveyor, Town Hall, Stoke-on-Trent, on payment of £5 deposit which will be returned on receipt of a bona-fide Tender.

The Corporation invite TENDERS from civil engineering contractors for CARRYING OUT WORKS on the ABOVE SEWERAGE SCHEME.

Town Clerk.  
HARRY TAYLOR.

## CONTRACTS

**GLoucestershire County Council.**  
(Agents for the Ministry of Transport.)

LONDON-SOUTH WALES MOTORWAY, M.4  
(GLOUCESTERSHIRE SECTION.)

## SOIL SURVEY.

TENDERS are invited from experienced contractors for CARRYING OUT a SOIL SURVEY on the line of the Motorway. The work comprises Boring on the site of about 13 miles of Motorway, plus Side Roads, and about 30 Bridges. Soil Sampling, Testing, and the Submission of Reports.

Tenders must be submitted to the County Surveyor, Quay Street, Gloucester, by 27th NOVEMBER.

GUY H. DAVIS,  
Clerk of the County Council.

**COUNTY BOROUGH OF SOUTHERN-ON-SEA.**

## UNIFORMS.

TENDERS are invited for SUPPLY of POLICE UNIFORM CLOTHING for the year ending 31st March, 1963.

Forms of Tender, showing types and approx. quantities of garments required, are obtainable from the Chief Constable, Central Police Station, Southend-on-Sea. Specimens of garments can be inspected at that address.

Tenders, with samples, must be received by 3 p.m. on the 24th NOVEMBER, 1961, and must be sent in the envelope provided, addressed to the undersigned. All prices should include purchase tax where applicable.

The Corporation do not bind themselves to accept the lowest or any Tender.

ARCHIBALD GLEN,  
Town Clerk.

**CITY AND COUNTY OF NEWCASTLE UPON TYNE.**

## NEWCASTLE QUAY EXTENSION.

TENDERS are invited for the LAYING of approx. 18,000 sq. yd. of 10in. thick REINFORCED CONCRETE DECKSLAB, TRANSPORTATION, ETC., 76in. yd. of SINGLE LINE DOCK RAIL and CRANE TRACKS, and appurtenant Drainage and other works, for the Newcastle Corporation Quay Extension.

The works for which Tenders are now invited are to be carried out upon completion of the contract in progress, and expected to be completed by February, 1962.

Contract documents and Drawings can be obtained from the City Engineer, Town Hall, Newcastle upon Tyne, 1, upon payment of a deposit of Five Guineas by cheque made payable to the City Treasurer, Newcastle upon Tyne, which will be returned upon receipt of a bona-fide Tender.

Tenders are to be returned to the City Engineer not later than First Post on the 5th DECEMBER, 1961.

No Tender will be considered which is not enclosed in the official envelope and which does not bear any name or mark to indicate the sender.

The Corporation do not bind themselves to accept the lowest or any Tender.

By Order.  
JOHN ATKINSON,  
Town Clerk.

Town Hall,  
Newcastle upon Tyne, 1.  
November, 1961.

**Waltham Holy Cross Urban District Council.**

## BROOKER ROAD EXTENSION, ROADWORKS AND DRAINAGE.

The Council invites TENDERS for the ABOVE WORKS, comprising of the FOLLOWING APPROX. QUANTITIES:

90 lin. yd. 9in. dia. Glazed Stoneware Foul Sewer.

300 lin. yd. 9in. dia. Glazed Stoneware Surface Water Sewer.

3,350 sq. yd. 7in. thick Reinforced Concrete Carrigeway.

625 sq. yds. 5in. x 10in. Precast Concrete Kerb.

700 sq. yd. 1in. thick Bitumen Macadam Carpet on 2in. thick Base Course to form footpath.

The Specification, Bills of Quantities, Conditions of Contract and Form of Tender can be obtained from GEO. CLARKE, A.R.I.C.S., M.I.Mech.E., Engineer and Surveyor, Town Hall, Waltham Abbey, Essex, upon payment of £2 as deposit, returnable upon receipt of a bona-fide Tender and/or the return of all documents.

The above documents and plans can be inspected at the Engineer and Surveyor's Office without charge during office hours (excluding evenings). Tenders must be returned to the undersigned not later than Noon on THURSDAY, 23rd November, and no Tender will be received except in the official Tender envelope, sealed and endorsed "Tender for Brooker Road Extension Roadworks and Drainage, but shall not bear any name or mark indicating the sender." Tenders, sealed in the envelopes provided, are to be delivered to the undersigned by Noon, 8th DECEMBER, 1961.

The Council do not bind itself to accept the lowest or any Tender.

ROLAND E. SMITH,  
Clerk of the Council.

Town Hall,  
Waltham Abbey,  
Essex.

**Narberth Rural District Council.**

## EASTERN CLEDDAU ABSTRACTION SCHEME.

**FIXED-PRICE TENDERS** are invited from experienced contractors for the CONSTRUCTION of a RIVER INTAKE, REINFORCED CONCRETE PUMPING STATION, 8,000ft. of 8in. ASBESTOS-CEMENT RISING MAIN, Treatment Plant House, and other appurtenant works.

Plans, Specifications and Quantities may be seen at the Offices of the Council's Consulting Engineers, MESSRS. WARD, ASHCROFT AND PARKMAN, Chartered Civil Engineers, 18 The Temple, Dale Street, Liverpool, 2, or at the Council Offices, Blaenavon, Narberth, Pembrokeshire, and copies of the Tender documents can be obtained from the undersigned on payment of a deposit of Five Guineas (by cheque payable to Narberth R.D.C.) which will be returned on receipt of a bona-fide Tender not subsequently withdrawn, and the return of documents loaned to the contractors.

Tenders, in plain sealed envelopes endorsed "Eastern Cleddau Abstraction Scheme," to be delivered to the undersigned not later than Noon on THURSDAY, 30th November, 1961.

C. J. H. BEYNON,  
Clerk to the Council.

Council Offices,  
Blaenavon,  
Narberth, Pembs.

## CONTRACTS

**BOROUGH OF WORKSOP.**

## STREET LIGHTING.

TENDERS are invited from bona-fide contractors for the REMOVAL of EXISTING STREET LIGHTING STANDARDS, and for the SUPPLY, ERECTION and SERVICING of the UNDERMENTIONED STREET LIGHTING UNITS:

217 Sodium Lantens, 60-W, mounted on 15ft.

Concrete Columns.

Tenders may quote for: (1) Supplying only the lanterns, auxiliary equipment and lamps; or (2) the removal of existing lighting units and the supply of all equipment; or (3) the whole of the work required.

Copies of the Specification, Bills of Quantities and Forms of Tender may be obtained from the Borough Engineer, Park House, Worksop, upon payment of £3 3s. which will be reimbursed upon the receipt of a bona-fide Tender.

Tenders, in plain envelopes endorsed "Street Lighting," must reach the undersigned not later than 10 a.m. on MONDAY, the 27th November, 1961.

The lowest or any Tender will not necessarily be accepted.

RUSSELL C. PHARAOH,

Town Clerk.

Town Hall,  
Worksop,  
27th October, 1961.

**BOROUGH OF BECKENHAM.**

## PRIVATE STREET WORKS.

The BOROUGH COUNCIL invites TENDERS for the MAKING-UP of THE AVENUE (Part), WESTGATE ROAD (Part), ASH TREE CLOSE (Part).

The works comprise approx. 9,900 sq. yd. of Bituminous Carrigeway Surfacing, Kerbing, Channeling, Artificial Stone and Mastic Asphalt Paving to Footways, Footpath Connections, and other incidental works, together with approx. 700 sq. yd. 9in. dia. Surface Water Sewer and Brick Manholes.

Copies of the Specification, Bills of Quantities, Forms of Tender and envelopes may be obtained, and the Drawings and General Conditions of Contract inspection application to JAMES DOVE, A.M.I.C.E., Borough Engineer, Town Hall, Beckenham, Kent, on payment of a deposit of £2 which will be refunded on receipt of a bona-fide Tender that is not subsequently withdrawn.

Sealed Tenders, in the plain official envelopes provided, endorsed "Tenders for Private Street Works," must reach the undersigned not later than 5 p.m. on MONDAY, 27th November, 1961. Tenders received after the prescribed date and time will not be considered, and the deposit will not be refunded unless a bona-fide Tender is received by the due date and time.

The Council does not bind itself to accept the lowest or any Tender.

R. WEBSTER STORR,

Town Clerk.

Town Hall,  
Beckenham,  
Kent.  
November, 1961.

**HORNCHURCH URBAN DISTRICT COUNCIL.**

## ENGINEER AND SURVEYOR'S DEPARTMENT.

REPAIRS TO ACCOMMODATION BRIDGE OVER RAILWAY BETWEEN BURNWAY AND WOODHALL CRESCENT.

TENDERS are invited for the ABOVE-MENTIONED WORKS, which comprise the FOLLOWING:

(1) The Repointing of Brick Joints over most of the surface area of the bridge;

(2) Cutting out Defective Bricks and Copings,

and Replacing with New;

(3) Other Remedial Works to Rainwater Down-pipes, etc.

The Specification and Schedule of Works may be obtained from the Engineer and Surveyor, Council Offices, Blaenavon, Blaenavon, and payment of a deposit of Two Guineas which will be refunded upon receipt of a bona-fide Tender not subsequently withdrawn.

The documents must be returned to the undersigned not later than Noon on MONDAY, 20th November, 1961, sealed in the envelope provided, and which shall bear no indication of the person(s) tendering.

P. L. COX,

Clerk of the Council.

**CALNE AND CHIPPEHAM RURAL DISTRICT COUNCIL.**

## SLAUGHTERFORD WATER SUPPLY.

TENDERS are invited for LAYING approx. 1,200yds. of 3in. ASBESTOS-CEMENT WATER MAINS at Slaughterford.

Copies of the Contract documents can be obtained from the Engineer of the Council, at the address below, against a deposit of Two Guineas, refundable on receipt of a bona-fide Tender not subsequently withdrawn.

Tenders, sealed in the envelopes provided, are to be delivered to the undersigned by Noon, 8th DECEMBER, 1961.

The Council does not bind itself to accept the lowest or any Tender.

H. F. HALES,

Clerk of the Council.

Blewley House,  
Marshfield Road,  
Chippenham.

**WEST KESTEVEN RURAL DISTRICT COUNCIL.**

## TENDERS FOR GROUPED AGED PERSONS' ACCOMMODATION AT COLSTERWORTH.

TENDERS are invited for the CONSTRUCTION of ONE BLOCK OF 16 FLATLETTS, together with Warden's Flat; TWO BLOCKS OF FOUR ONE-BEDROOM FLATS, and THREE PAIRS OF ONE-BEDROOM BUNGALOWS, in BACK LANE, Colsterworth.

Bills of Quantities, Drawings, Specification and Form of Tender can be obtained from the Council's Surveyor, Sandon Close, Grantham, on receipt of deposit of Two Guineas by cheque made payable to the West Kesteven Rural District Council, which will be returned on receipt of a bona-fide Tender not subsequently withdrawn.

Tenders to be forwarded to me at the Council Offices, Sandon Close, Grantham, in plain sealed envelopes marked "Community Dwellings, Colsterworth" by THURSDAY, the 30th November, 1961.

The lowest or any Tender will not necessarily be accepted. Acceptance of Tender will be subject to the final approval of the Ministry of Housing and Local Government.

J. R. MORGAN,

Clerk of the Council.

## CONTRACTS

**BOROUGH OF ALTRINCHAM.**

## PRIVATE STREET WORKS.

**MAKING-UP** of BRIDGEWATER ROAD (Part).

Specification, Bill of Quantities and Form of Tender may be obtained from and Drawings Inspected at the Office of the Borough Surveyor, Town Hall, Altrincham, during normal office hours, upon payment of a deposit of Two Guineas made payable to the Borough Treasurer.

Tenders must be enclosed in plain sealed envelope endorsed "Private Street Works—Bridgewater Road (Part)," and delivered to the undersigned not later than 12 Noon on MONDAY, 27th November, 1961.

The Council does not bind itself to accept the lowest or any Tender.

E. GRAHAM THOMAS,  
Town Clerk.

Town Hall,  
Altrincham,  
November, 1961.

**CITY OF LEEDS.**

## WATERWORKS DEPARTMENT.

## CARLTON RISE BOOSTER PUMPING STATION.

**TENDERS** are invited for the SUPPLY, ERECTION and MAINTENANCE of an ELECTRICALLY DRIVEN AUTOMATIC BOOSTER PUMPING PLANT having a capacity of 30 gallons per minute against a total head of 165ft., complete with Switchgear, Motors, Time Controls, Air Pressure Tank, Air Compressor, Piping and Valves.

Contract documents and General Arrangement Drawing may be obtained upon application to the Waterworks Department, Civic Hall, Leeds 1.

Forms of Agreement and Conditions of Contract and the Institution of Electrical Engineers General Conditions of Contract (Home Contracts—with Erection) may be seen at Room 15, Civic Hall.

Tenders, enclosed in plain sealed covers endorsed "Tender for Pumping Plant—Waterworks," must be sent to the Town Clerk, Room 57, Civic Hall, Leeds, 1, by 12 Noon on TUESDAY, 5th December, 1961.

KENNETH L. FORSTER, M.I.C.E.,  
General Manager and Engineer.  
Civic Hall,  
Leeds 1,  
30th October, 1961.

**CANVEY ISLAND URBAN DISTRICT COUNCIL.**

## HOUSING SITE, SMALLGAINS (ALLOTMENT SITE)—CONTRACT 51.

**TENDERS** are invited for the ERECTION of 16 HOUSING UNITS and 12 Garages and Hardstandings, Soil and Stormwater Sewers and Drainage, together with Footpath Verges, and certain ancillary works, at the SMALLGAINS ALLOTMENT SITE.

Plans, Specifications and Forms of Tender will be available from the Office of the Engineer and Surveyor after Monday, the 6th November, 1961, upon deposit of a fee of Two Guineas, returnable upon submission of a bona-fide Tender and all documents.

Tenders, in sealed envelopes endorsed "Housing Contract 51," should be returned to the undersigned by not later than 5 p.m. on FRIDAY, the 24th November, 1961.

The Council do not undertake to accept the lowest or any Tender.

J. RUMBLE,  
Clerk of the Council.

Council Offices,  
Canvey Island,  
Essex.

## URBAN DISTRICT OF SADDLEWORTH.

## MECHANICS INSTITUTE, UPPERMILL.

## PROPOSED ALTERATIONS AND EXTENSIONS.

**THE COUNCIL** invite TENDERS for the ABOVE WORK.

Contractors wishing to tender may obtain Form of Tender, Bills of Quantities and Specification from, and inspect Drawings at, the Office of the Council's Architects, MESSRS. HOWARD AND SEDDON, 88 Mosley Street, Manchester, 2, on or after WEDNESDAY, the 8th November, 1961.

A fee of £2 2s. will be charged for the supply of the Form of Tender, etc. This will be returnable on receipt of a bona-fide Tender.

Tenders, in sealed envelopes, endorsed "Mechanics Institute, Uppermill," should be delivered to the undersigned, at the address stated below, not later than 10 a.m. on FRIDAY, the 24th NOVEMBER, 1961.

The Council do not bind themselves to accept the lowest or any Tender.

T. NUTTALL,  
Clerk of the Council.

Council Offices,  
St. Chads,  
Uppermill,  
Near Oldham.

## EAST SUFFOLK AND NORFOLK RIVER BOARD.

## RIVER THURNE—WOMACK DYKE—PILING AND WALL RAISING.

## SUPPLY OF TIMBER AND STEELWORK.

**TENDERS** are invited for the SUPPLY and DELIVERY to LUDHAM SITE, Norfolk, of the FOLLOWING:

(i) Approx. 3,263 cu. ft. of Home-grown Oak.

(ii) Approx. 19 tons Welded Mild Steel Channel Box Piles, together with Washer Plates.

Further particulars and Tender Forms may be obtained from the Chief Engineer at the address below.

Tenders, enclosed in a plain sealed envelope endorsed "Tender for Piling Timber — WOMACK DYKE" for (i), and "Tender for Piling Steelwork—Womack Dyke" for (ii), must be received by the undersigned not later than 9 a.m. on FRIDAY, 24th November, 1961.

S. VINCENT ELLIS,  
Clerk of the Board.

The Cedars,  
Albermarle Road,  
Norwich,  
Norfolk, NOR 81E.

October, 1961.

## HAUGHLEY PARISH COUNCIL.

**TENDERS** invited for SUPPLY and ERECTION of 10 25ft. CONCRETE COLUMNS, SUPPLY, FIX and WIRE 10 140-W SODIUM LANTERNS, and Services to Columns.

Details from CLERK OF COUNCIL, Mere Farm, Haughley, Suffolk.

Closing date for Tenders: 23rd NOVEMBER, 1961.



## CONTRACTS

**NORFOLK COUNTY COUNCIL.**  
HIGHWAYS DEPARTMENT.

The Norfolk County Council invites TENDERS for the FOLLOWING:-  
 Hire or Mechanical Haulage Vehicles.  
 Supply and Delivery of Roadstone.  
 Supply and Delivery of Tar and Bitumen Coated Stone and Cold Asphalt.  
 Supply of Top Soil and Sand.  
 Supply of Tar and Bitumen Compounds and Bitumen Emulsion.  
 Supply of Ready Mixed Concrete.  
 Supply of Motor Fuels and Lubricants.  
 Surface Dressing of Roads.  
 Dressing and Laying Bituminous Gravel Mixes.  
 Dressing and Laying Surface Dressings (Supplying and Laying).  
 Laying of Plastic White Lines.  
 Fixing of Reflecting Roadstudts.  
 Supply of Road Tools and Implements.  
 Full details and Specifications are contained in the Tender Forms, which may be obtained from the County Surveyor.  
 Tenders must be submitted in duplicate, in the envelope which will be supplied, and must be delivered not later than 12 Noon on 7th DECEMBER, 1961, to the Clerk of the County Council, County Offices, Thorpe Road, Norwich, Norfolk, NOR.47A.

County Offices,  
 Thorpe Road,  
 Norwich,  
 Norfolk, NOR.47A.

**COUNTY COUNCIL OF DURHAM.**

TENDERS invited for SUPPLY of the FOLLOWING:-  
 (1) Furniture to Easington Technical College.  
 (2) Electric Typewriters to Easington Technical College.  
 (3) Sewing Shop Equipment to Consett Technical College.  
 Forms of Tender, returnable by 24th NOVEMBER, 1961, and details from undersigned.

G. H. METCALFE,  
 Director of Education.

Shire Hall,  
 Durham.  
 30th October, 1961.

**COUNTY BOROUGH OF WALLASEY.**

TENDERS are invited by 10 a.m. TUESDAY, 5th December, 1961, for the SUPPLY and DELIVERY of UNIFORM CLOTHING to the Various Departments of the Corporation (including Ferries, Motor Bus, Borough Surveyor, Police and Fire Brigade).

Full particulars, with Specifications, General Conditions and Forms of Tender may be obtained from the undersigned.

A. G. HARRISON,  
 Town Clerk.

Town Clerk's Office,  
 Town Hall,  
 Wallasey.

**BOROUGH OF CHELMSFORD.**

## NEW LIVESTOCK MARKET—VICTORIA ROAD.

The CORPORATION propose shortly to invite TENDERS on a Fixed-price basis from a selected list of contractors for the CONSTRUCTION PHASE III DEVELOPMENT of the ABOVE PROJECT.

The work will comprise the Erection of Sale Halls, Dairy Cattle Shed, Fat Cattle Shelter, Trade Offices, Auctioneers' Offices, Conveniences, Pannage, and other ancillary accommodation. The total floor area of the building is approx. 35,000 sq. ft.

Construction generally will be Reinforced Concrete Frame and Roof Beams, Brick Infill Panels, Reinforced Floors supported on Ground Beams and Piles.

Contractors possessing a substantial organisation, and duly experience in this class of work who are desirous of being considered for the selected list should apply in writing to the Borough Engineer, Municipal Offices, Coval Lane, Chelmsford, by 22nd NOVEMBER, 1961, giving details of organisation and experience.

B. A. FRANCIS,  
 Town Clerk.

**BOROUGH OF HARROW.**

## SUPPLY OF OVERALLS.

TENDERS are invited for the SUPPLY and DELIVERY of 970 MEN'S NAVY BLUE BIB-AND-BRACE OVERALLS and JACKETS.

Forms of Tender may be obtained from the Borough Engineer and Surveyor, 48 Uxbridge Road, Standon, Middlesex.

Tenders must be returned to me by 21st NOVEMBER, 1961, in plain sealed envelopes bearing no names or marks indicating the senders, and endorsed "Tender for Supply of Overalls."

The Council does not bind itself to accept the lowest or any Tender.

DAVID PRITCHARD,  
 Town Clerk.

Harrow Weald Lodge,  
 92 Uxbridge Road,  
 Harrow, Middx.

**CITY AND COUNTY OF NEWCASTLE UPON TYNE.**

## TENDERS FOR ROAD AND SEWER WORKS.

The HOUSING COMMITTEE of the CITY COUNCIL is prepared to receive TENDERS as follows:

- (a) Newbiggin Hall Housing Estate, Phase III, Part I—Roads and Sewers. Construction and Maintenance of approx. 12,000 sq. yd. 6in. and 8in. Vibrated Reinforced Concrete Carriageways, 800 lin. yd. 6in. and 9in. dia. Salt Glazed Stoneware Foul Water Sewers, 1,100 lin. yd. 6in. to 15in. dia. Precast Concrete Surface Water Sewers and Manholes.
- (b) Shielsfield Redevelopment — Four-storey Maisondes, Napier Street—Roadworks. Construction and Maintenance of approx. 2,000 sq. yd. Bitumen Macadam Carriageways, 1,500 sq. yd. Precast Concrete Flanged Footways and ancillary works.

Bills of Quantities and Forms of Tender may be obtained, and the Drawings Inspected, at the Office of the City Engineer, Town Hall, Newcastle upon Tyne, to whom sealed Tenders, enclosed in the envelope provided, are to be delivered not later than 10 a.m. on THURSDAY, 7th December, 1961.

No Tender will be considered unless it is enclosed in the official envelope provided for that purpose, and such envelope must not bear any name or mark indicating the sender.

The Committee does not bind itself to accept the lowest or any Tender.

JOHN ATKINSON,  
 Town Clerk.

Town Hall,  
 Newcastle upon Tyne.

## THE CONTRACT JOURNAL

**CONTRACTS**  
**COUNTY COUNCIL OF THE WEST RIDING OF YORKSHIRE.**

## DEMOLITION OF DISUSED GUN SITE AT THRYBERGH, ROTHERHAM RURAL DISTRICT, AND RECLAMATION OF LAND TO AGRICULTURAL USE.

TENDERS are invited from contractors with experience in demolition work and site reclamation, for the RESTORATION of the ABOVE SITE to AGRICULTURAL USE.

Drawings, Conditions of Tender, Specification and Form of Tender may be obtained on application from the County Planning Officer, County Planning Department, 71 Northgate, Wakefield.

The County Council do not bind themselves to accept the lowest or any Tender.

Tenders are to be forwarded in a plain sealed envelope addressed "Tender—Restoration of Thrybergh Gun Site" to me, the undersigned, and received at Room 50, County Hall, Wakefield, not later than 12 Noon on the 4th DECEMBER, 1961.

BERNARD KENYON,  
 Clerk of the County Council.

**COUNTY OF KINCARDINE.**

## LOCH LEE WATER SUPPLY SCHEME—FIRST PHASE. CONTRACT NO. 8—12IN. DIA. MAIN FROM AUCHENBLAE TO SHERIFF'S KETTLE.

KINCARDINE COUNTY COUNCIL invite TENDERS for EXCAVATING and REFILLING TRENCHES for, and PROVIDING, LAYING and JOINING about 6½ miles of 12in. dia. SPUN-IRON PIPING, together with the Execution of Relative Works.

Plans may be seen at the Office of the County Surveyor, Stonehaven. The Clerk, Stonehaven, or the Office of the Engineers, MESSRS. CROUCH AND HOGG, 18 Woodside Crescent, Glasgow, C.3, from the latter of whom copies of the Tender documents may be obtained on written application, accompanied by a deposit of £5, returnable on receipt of a bona-fide Tender.

Sealed Tenders, marked "LLD. Contract No. 8" are to be lodged with the COUNTY CLERK, 33 Evan Street, Stonehaven, by Noon on TUESDAY, 5th December, 1961.

A. G. HARRISON,  
 Town Clerk.

**BOROUGH OF PWLLHELI.**

## SEWERAGE SCHEME—CONTRACT REF. 108/A2.

FIXED-PRICE TENDERS are invited for a Contract to include the FOLLOWING WORKS:

- (i) Sewage Pumping Station with Reinforced Concrete Substructure (25ft. x 21ft. x 26ft.) and Brick Superstructure (24ft. x 14ft. x 12ft.).
- (ii) Sewage Pumping Station with Reinforced Concrete Substructure (14ft. x 12ft. x 7ft.) and Brick Superstructure (12ft. x 10ft. x 8ft.).
- (iii) River Crossing approx. 50yd. long with 18in. dia. Cast-Iron Pipes on Timber Piles.
- (iv) Approx. 200yd. of 15in., 15in. and 18in. dia. Concrete and Cast-Iron Pipe Sewers.
- (v) Approx. 550yd. of 4in. dia. Cast-Iron Pipe.
- (vi) Tidal Flap Chambers, Communiton Chamber, Manholes, and Incidental works.

The Tender documents may be obtained from the Consulting Engineers, MESSRS. SANDFORD, FAWCETT AND PARTNERS, 53 Victoria Street, London, S.W.1. Payment of a deposit of Five Guineas which will be refunded on receipt of a bona-fide Tender not subsequently withdrawn, and the return of all documents.

The Drawings may be examined at the Office of the Borough Surveyor, Municipal Buildings, Penlan Street, Pwllheli, and at the Offices of the Consulting Engineers.

Sealed tenders, marked "Contract Ref. 108/A2." should reach the undersigned not later than Noon on the 11th DECEMBER, 1961.

The Council do not bind themselves to accept the lowest or any Tender.

CYRIL C. DAVIES,  
 Town Clerk.

Municipal Buildings,  
 Penlan Street,  
 Pwllheli, Caerns.

**BOROUGH OF WISBECH.**

## SURFACING OF CARRIAGeways.

## EAST STREET AND LEROWE ROAD AND TINKER'S DROVE ESTATES.

TENDERS are invited for SURFACING of CARRIAGeways at the ABOVE.

The works comprising this Contract are approx. 1110 sq. yd. of Carrigeway to be surfaced with 1½in. dia. Tarmacad Zin. thick, and 4.760 sq. yd. of Fine Cold Asphalt.

Further details and specification may be obtained from the Borough Engineer and Surveyor, Church Terrace, Wisbech, Cambs.

Tenders must be returned to the undersigned not later than 12 Noon on MONDAY, 27th November, 1961.

The Council does not bind itself to accept the lowest or any Tender.

W. G. E. LEWIS,  
 Town Clerk.

Town Hall, Wisbech, Cambs.

**KINGSCLERE AND WHITCHURCH RURAL DISTRICT COUNCIL.**

## NORTH WESTERN AREA WATER SUPPLY.

## ACBURY PARK—CONTRACT NO. 3.

FIXED-PRICE TENDERS are invited from experienced contractors for the CONSTRUCTION and MAINTENANCE of approx. 1,300yd. of 4in. dia. SPUN-IRON WATER MAINS, together with Valves, Fittings, and all other works incidental thereto, in the above Rural District.

Payment details and Form of Tender may be obtained on or after 11th November from the Council's Engineers, MESSRS. LEMON AND BLIZARD, 59 Tuition Street, Westminster, London, S.W.1, on payment of a deposit of Three Guineas which will be refunded on the receipt of a bona-fide tender not subsequently withdrawn, and the return of all documents.

Tenders, on the form provided, accompanied by fully priced Bills of Quantities, in a plain sealed envelope which shall not bear any name or mark indicating the sender, and endorsed "Tender for Acbury Park—Contract No. 3" must reach the undersigned not later than SATURDAY, 2nd December, 1961.

The Council do not bind themselves to accept the lowest or any Tender.

F. A. H. KEATES,  
 Clerk of the Council.

Council Offices,  
 Kingsclere,  
 Near Newbury, Berks.

**CONTRACTS**  
**COUNTY BOROUGH OF BLACKPOOL.**

## PROPOSED REDEVELOPMENT QUEENSTOWN CLEARANCE AREA AND PART OF LAYCOCK GATE INDUSTRIAL AREA, COMPRISING 4.88 ACRES.

Contractors are invited, who have the facilities and would be prepared to enter into a Package Deal Form of Contract for the REDEVELOPMENT of the ABOVE SITE, with High Density Flats and Maisonettes, to submit their names for consideration.

The Contract would include Architectural and Specialist Services, Site Layout, Roads, Sewers, and Drainage, together with the Site with Multi-storey and Three- and Four-storey Flats and Maisons.

Further particulars may be obtained from the BOROUGH SURVEYOR, Box No. 17, Municipal Buildings, Blackpool.

**COUNTY BOROUGH OF HUDDERSFIELD.**

## WATERWORKS DEPARTMENT.

## PERIOD CONTRACTS FOR PIPES AND CASTINGS.

TENDERS are invited for the SUPPLY of ANY or ALL of the FOLLOWING PIPES and CASTINGS for the period of 12 months ending 31st December, 1962:

PERIOD CONTRACT "A"—British Standard Cast-Iron Pipes.

PERIOD CONTRACT "B"—British Standard Special Castings.

PERIOD CONTRACT "C"—Special Castings.

PERIOD CONTRACT "D"—Surface Boxes.

The Conditions of Contract, Specification, Schedule Drawings and Form of Tender may be obtained, on application, from the Waterworks Engineer, 24 Ramsden Street, Huddersfield.

Tenders, properly endorsed, must be received by the undersigned not later than 10 o'clock on the 24th NOVEMBER, 1961.

The Corporation do not bind themselves to accept the lowest or any Tender.

HARRY BANN,  
 Town Clerk.

**BOROUGH OF CHELMSFORD.**

## PRINCES ROAD REFUSE TIP—RECLAIMING OF WASTE.

TENDERS are invited for the RECLAIMING of WASTE MATERIALS from the Borough Council Refuse Tip at Princes Road, Chelmsford.

Tender documents may be obtained from the Borough Engineer and Surveyor, Municipal Offices, Coval Lane, Chelmsford.

Tenders must be received by the undersigned not later than Noon on the 27th NOVEMBER, 1961.

B. A. FRANCIS,  
 Town Clerk.

**BOROUGH OF WATFORD.**

## WATER DEPARTMENT.

## 18IN. DIA. WATER MAIN—THE GROVE WATERWORKS TO ABBOTS Langley RESERVOIR.

Contractors possessing the necessary experience and requisite plant, and wishing to TENDER for the LAYING of approx. 5,000yd. of 18in. dia. and 120yd. of 24in. dia. SPUN-IRON PIPES, together with ancillary works, are invited to submit their names to the Engineers, A.M.I.C.E., A.M.I.W.E., M.R.I.M., Borough Water Engineer and Manager, Town Hill, Watford, Herts, not later than 2 p.m. on FRIDAY, 1st December, 1961.

Applications for documents must be accompanied by a deposit of £2 which will be refundable on receipt of a bona-fide Tender.

Contract documents will be forwarded in due course, and tenderers will then be informed of the latest date for receipt of Tenders.

The Council does not bind itself to accept the lowest or any Tender.

GORDON H. HALL,  
 Town Clerk.

**DORKING URBAN DISTRICT COUNCIL.**

## SURFACING MATERIALS.

TENDERS are invited for the SUPPLY and DELIVERY to Dorking of approx. 500 tons of BITUMEN MACADAM to B.S. 1621 and 2040.

Tender documents, which are to be returned not later than 12 Noon on 20th NOVEMBER, 1961, may be obtained from the Engineer and Surveyor.

The Council do not bind themselves to accept the lowest or any Tender.

F. G. SUTHERLAND,  
 Clerk of the Council.

**KEYNSHAM URBAN DISTRICT COUNCIL.**

## PROPOSED CONVERSION OF SEWAGE EJECTOR STATION TO PUMPING STATION—NORMAN ROAD HOUSING ESTATE, SALTFORD.

TENDERS are invited for the PROVISION and INSTALLATION of TWO SEWAGE PUMPS each rated 180 gallons per minute, and TWO ELECTRIC MOTORS, together with Associated Equipment, for the Conversion of an existing Sewage Ejector Station into a Pumping Station.

The works also include the Removal of the existing Two Electors, each rated at 25 gallons per minute, together with the existing Electric Motors, Belts and Compressors, and other associated equipment and OFFERS are invited for the purchase of this equipment.

Specification and Instructions for Tendering may be obtained upon application to the Engineer and Surveyor, Council Offices, Keynsam, Bristol, on payment of a deposit of Two Guineas which will be refunded on the receipt of a bona-fide tender not subsequently withdrawn.

Conditions of Contract may be inspected at the Office of the Surveyor during normal office hours.

Tenders, in plain sealed envelopes endorsed "Pumping Station—Norman Road Estate," must reach the undersigned not later than First Post on WEDNESDAY, 13th DECEMBER, 1961.

The Council do not bind themselves to accept the lowest or any Tender.

GEO. R. ASHTON,  
 Clerk of the Council.

Council Offices,  
 Keynsam,  
 Bristol.

2nd November, 1961.

## CONTRACTS

**ANGUS COUNTY COUNCIL.**  
LOCH LEE WATER SUPPLY—1ST PHASE.  
CONTRACT NO. 10/1.

TENDERS are invited for SUPPLYING and LAYING approx. 7,800yd. of 9in. dia. STEEL PIPES and 1,570yd. of 9in. and 860yd. of 3in. dia. A.C. PIPES and Fittings, between BARNHEAD and WUDDY LAW. Contractors wishing Contract documents should apply to the County Engineer, County Buildings, Forfar, not later than 20th November, 1961.

IAN A. MACKNIGHT,  
County Clerk.

County Buildings,  
Forfar.

3rd November, 1961.

**COUNTY BOROUGH OF MIDDLESBROUGH.**  
41 HOUSES, 16 FLATS AND 27 GARAGES—  
DUNSTABLE ROAD.

TENDERS are invited for the ERECTION of the ABOVE Bills of Quantities from Borough Engineer; deposit Two Guineas. Tenders to be received by TOWN CLERK on or before 4th DECEMBER.

**BOROUGH OF LYMPHINGTON.**  
PRIVATE STREET WORKS ACT, 1892.  
NORTHOVER ROAD, BROWNING'S CLOSE,  
FORWARD DRIVE.

TENDERS are invited for MAKING-UP NORTHOVER ROAD, BROWNING'S CLOSE and FORWARD DRIVE, within the Borough of Lympington.

Plans and Conditions of Contract may be inspected at the Office of the Borough Engineer, Town Hall, Lympington, from whom copies of the Specification, Bills of Quantities and Form of Tender may be obtained on payment of a sum of £2 2s. returnable on receipt of a bona-fide Tender not subsequently withdrawn.

Tenders, accompanied by priced Bills of Quantities in plain sealed envelopes endorsed "P.S.W.—Northover Road Group," must be delivered to the undersigned not later than First Post on 7th DECEMBER, 1961.

The Council does not bind itself to accept the lowest or any Tender.

A. L. SLATER,  
Town Clerk.

Town Hall,  
Lympington.

**BOROUGH OF PONTEFRACT.**  
EASTBOURNE VIEW, BAGHILL  
KERBING AND FOOTPATH CONSTRUCTION.

FIXED-PRICE TENDERS are invited for the EXCAVATION for, and CONSTRUCTION of, approx. 600 sq. yd. of TARMACADAM and COAL ASPHALT FOOTPATH, together with approx. 420 lin. yds. of Precast Concrete Kerbing, Channelling and Edging; the Construction of Seeding of Grass Margins; Excavation for, and Fixing of, Surface Water Gullies and Connections to existing Sewer, and other ancillary works.

Drawings and General Conditions of Contract may be inspected at the Office of the Borough Engineer, Municipal Offices, Pontefract, from whom Forms of Tender, Specification and Bills of Quantities, etc., can be obtained.

Tenders, in plain sealed envelopes endorsed "Eastbourne View," must reach the undersigned not later than 12 Noon on TUESDAY, 28th November, 1961.

The Council does not bind themselves to accept the lowest or any Tender.

J. F. ROOK,  
Town Clerk.

Municipal Offices,  
Pontefract.

**BOROUGH OF ENFIELD.**  
RESURFACING AND HAUNCH STRENGTHENING WORKS—  
PART CATTLEGATE ROAD AND WHITEWEBBS ROAD.

The COUNCIL invites TENDERS for the ABOVE SCHEME, which comprises Regulating and Strengthening Works, including Sunken Concrete Haunches, on approx. 550yd. of Cattlegate Road and 1,000yd. of Whitewebs Road, together with Kerbling and Footpath Resurfacing.

The Specification, Bill of Quantities, Conditions of Contract and Form of Tender may be obtained from H. D. PEAKE M.Sc.(Eng.), M.I.C.E., Borough Engineer and Surveyor, Borough of Enfield, 7 Little Park Gardens, Enfield, Middlesex, upon payment of £2 deposit, returnable upon receipt of a bona-fide Tender and/or the return of all the documents.

Tenders, in plain sealed envelopes, must reach the undersigned not later than Noon on MONDAY, 27th November, 1961 and no Tender will be received except in the official Tender envelope, sealed and endorsed "Tender for Resurfacing and Strengthening Works—Part Cattlegate Road and Whitewebs Road." The Tender envelope shall not bear the name or name indicating the tenderer.

Tenders should note that the Council does not bind itself to accept the lowest or any Tender.

CYRIL E. C. R. PLATTEN,  
Town Clerk.

Civic Centre,  
Enfield.

**HATFIELD RURAL DISTRICT COUNCIL.**  
CONSTRUCTION OF 18IN. DIA. CULVERT AND DITCHING WORKS AT WELHAM GREEN.

FIXED-PRICE TENDERS are invited for LAYING approx. 1in. yd. 18in. dia. CONCRETE PIPE partly in an existing ditch. Also the CLEARING and REGRADING of a further length of 150 lin. yd. of DITCH, together with other ancillary works.

Tender documents, including Drawings, may be obtained from the Engineer and Surveyor, B2 Great North Road, Hatfield, on payment of £2 2s. deposit, returnable after receipt of a bona-fide Tender not subsequently withdrawn.

Tenders, in the envelopes provided, must be received by the undersigned not later than 12 Noon on MONDAY, 4th December, 1961.

S. F. JAGO,  
Clerk of the Council.

Council Offices,  
16 St. Albans Road,  
Hatfield.

**HASTINGS CORPORATION.**

The above Corporation invite OFFERS for a Quantity of DISCARDED POLICE UNIFORM CLOTHING. Further information may be obtained from the CHIEF CONSTABLE, Police Headquarters, Hastings.

## CONTRACTS

**GLOUCESTERSHIRE COUNTY COUNCIL.**  
PROPOSED NEW FIRE STATION AND AMBULANCE STATION—PAGANHILL LANE, STROUD.  
LAND RECLAMATION.

Applications for Bills of Quantities, with deposit of £2 2s., returnable upon receipt of bona-fide Fixed-price TENDER, to reach County Architect, Shire Hall, Gloucester, by 14th NOVEMBER 1961.

The work consists of specialist civil engineering work, land reclamation, etc., in connection with the preparation of the site, for the later erection of a Fire Station and Ambulance Station.

The Council does not bind itself to accept the lowest or any Tender.

GUY H. DAVIS,  
Clerk of the County Council.

**BUCKS. COUNTY COUNCIL.**

## FIRE BRIGADE UNIFORM CLOTHING.

TENDERS are invited for the SUPPLY of the FOLLOWING:

Fire Tunics and Trousers; Patrol Jackets and Trousers; One-piece Dungee Suits; Greatcoats; Caps; Shoes; Three-quarter length Leggings; Socks; Shirts; Ties, and Officers' Raincoats.

Forms of Tender may be obtained from the Chief Fire Officer, Fire Brigade Headquarters, Cambridge Street, Aylesbury, Bucks.

Completed Form of Tender to be returned to the CLERK OF THE COUNCIL, County Hall, Aylesbury, by 2nd DECEMBER, 1961.

**COUNTY BOROUGH OF BLACKBURN.**

TENDERS (forms obtainable from me) are invited by Noon, 4th DECEMBER, for SUPPLY of UNIFORM CLOTHING.

FRANK SQUIRES,  
Town Clerk.

**BOROUGH OF KIDDERMINSTER.**

TENDER FOR A.186/27/11—  
INTERNAL REDECOARATION OF THE RETAIL MARKET.

FIXED-PRICE TENDERS are invited for the INTERNAL REDECOARATION of the RETAIL MARKET.

Tender documents and further information may be obtained from the Borough Engineer and Surveyor, 119 Mill Street, Kidderminster.

Tenders should be forwarded to the undersigned, to arrive not later than Noon on the 27th NOVEMBER, 1961.

JOHN L. EVANS,  
Town Clerk.

Town Hall,  
Kidderminster.

3rd November, 1961.

**BOROUGH OF WORTHING.**  
EAST WORTHING SEWAGE WORKS EXTENSION.

TENDERS are to be invited from experienced civil engineering contractors for the CONSTRUCTION of SEDIMENTATION TANKS, TIDAL STORAGE TANKS, SLUDGE DIGESTION TANKS, SLUDGE DRYING BEDS, CONCRETE CARRIERS, and other varied Civil Works, along with Ancillary Chambers and C.I. Pipe-laying and Earthworks; the total cost expected to be approx. £500,000.

A selected list of contractors will be approved and invited to tender. The Plans, Specification and Bills of Quantities will be available for issue early in December, 1961.

Tenders to be returned by 8th JANUARY, 1962.

The contractors wishing to be considered, please write to Borough Engineer and Surveyor, Town Hall, Worthing, Sussex, not later than 30th NOVEMBER, 1961.

ERNEST G. TOWNSEND,  
Town Clerk.

Town Hall,  
Worthing.

**CITY OF LANCASTER.**  
SEWERAGE SCHEME, 1961.

TENDERS are invited from contractors for the FOLLOWING WORKS:

CONTRACT NO. 1—Parkfield Drive to Stodday. This includes the Construction of 3,000 lin. yds. of 30in. to 45in. dia. Concrete Pipe Sewers and 1,300 lin. yds. of 12in. to 27in. Concrete Pipe Sewers, together with Manholes and other ancillary works. The Contract also entails Laying a 36in. dia. Concrete Pipe Sewer across a canal, including Provision of Cofferdams.

CONTRACT NO. 2—Barton Road and Durham Avenue. This includes the Construction of 550 lin. yds. of 12in. and 15in. Concrete Pipe Sewers, together with Manholes and ancillary works.

Special Conditions of Contract, Specification, Bills of Quantities and Form of Tender may be obtained from the City Engineer, Town Hall, Lancaster.

Contracts for Contracts Nos. 1 and 2, on payment of £2 per Contract, which will be returned on receipt of a bona-fide Tender not subsequently withdrawn, and the return of all documents supplied.

Drawings and General Conditions of Contract may be inspected at the City Engineer's Office during normal office hours.

Tenders, in plain sealed envelope endorsed "Sewerage Scheme Contracts," to be received by the undersigned not later than 10 a.m. on MONDAY, 18th December, 1961.

The Corporation does not bind itself to accept the lowest or any Tender.

J. D. WADDELL,  
Town Clerk.

Town Hall,  
Lancaster.

30th October, 1961.

**PETERBOROUGH RURAL DISTRICT COUNCIL.**

## MOBILE ALTERNATOR UNIT.

The above Council invite TENDERS for the SUPPLY of their sewerage pumping stations.

Specification and Tender Form can be obtained from the Council's Surveyor, M. R. GIBBS, at St. Priestgate, Peterborough, and completed Tender Form should be delivered to the undersigned, in the envelope provided, not later than 10 a.m. on TUESDAY, 5th December, 1961.

G. W. WRIGHT,  
Clerk of the Council.

St. Priestgate,  
Peterborough.

1st November, 1961.

## CONTRACTS

**COUNTY COUNCIL OF ESSEX.**  
LONDON-GREAT YARMOUTH TRUNK ROAD, A.12.  
CONSTRUCTION OF SUBWAY AT EAST ROAD, DAGENHAM.

TENDERS are invited for WORKS comprising the Construction of a Pedestrian Subway 107ft. long and 8ft. wide under Eastern Avenue at the junction with Steps, and ancillary Roadworks.

Conditions documents may be obtained from the COUNTY SURVEYOR, Old County Chambers, Chelmsford, on payment of a deposit of £5 which will be refunded fully, a bona-fide Tender is received, and if all the documents are returned.

Tenders must be submitted, in the envelope provided, not later than 12 o'clock Noon on FRIDAY, 7th December, 1961.

The Council does not bind itself to accept the lowest or any Tender.

**SOUTH CARDIGANSHIRE WATER BOARD.**

CONTRACT NO. 24.

PENPARC SERVICE RESERVOIR.

TENDERS are invited from experienced contractors for the CONSTRUCTION of a REINFORCED CONCRETE COVERED SERVICE RESERVOIR, with Earthen Embankments, to contain 250,000 gallons. Access Road thereto, and other ancillary works in connection therewith, at PENPARC, on the A.487 Road, about 2 miles east of Cardigan.

Copies of the Specification, Bill of Quantities and Form of Tender may be obtained from the Engineers, MESSRS. ROFE AND RAFFETY, 9 Broad Street, Green, Buckingham Gate, London, S.W.1, upon payment (by cheque only) of Two Guineas deposit, which will be repaid upon the receipt of a bona-fide Tender and the return of all documents supplied.

The Contract may be inspected at the Office of the Engineer to the Board, 36 Alban Square, Aberaeron, Cardiganshire.

Tenders, in plain sealed envelope endorsed "Tender for Contract No. 24," to be sent to the undersigned not later than 30th November, 1961.

The Board does not bind itself to accept the lowest or any Tender.

J. E. R. CARSON,  
Clerk to the Board.

County Offices,  
Marine Terrace,  
Aberaeron,  
Cardiganshire.

**SWIMMING POOL CONTRACTS.**—Will any contractor in the North of England, Scotland and South Wales, who is prepared to carry out the constructional and building work involved on new swimming pools, working to our technical directions, please contact UNIT SWIMMING POOLS, LTD., Wolverhampton.

For Contracts received too late for classification see page 201

## APPOINTMENTS VACANT

**S.T. PANCRAS (METROPOLITAN) BOROUGH COUNCIL.**

APPLICATIONS invited for the APPOINTMENT of BOROUGH ENGINEER AND SURVEYOR at a salary of £3,375-£3,750 plus car allowance. Candidates must be Members of the Institution of Civil Engineers and possess the Technical Grade of the Institution of Municipal Engineers, and should have had wide experience of municipal and civil engineering work, and Surveyor's Department.

Application Forms and further particulars from undersigned.

Closing date: 17th NOVEMBER.  
R. C. E. AUSTIN  
Town Clerk.

St. Pancras Town Hall,  
Euston Road,  
London, N.W.1.

**BOROUGH OF ROWLEY REGIS.**  
BOROUGH ENGINEER AND SURVEYOR'S DEPARTMENT.

APPLICATIONS are invited for the APPOINTMENT of ENGINEERING ASSISTANT, Grade A.P.T. II. Preference will be given to applicants who have had experience in sewerage and road construction, and passed the Joint Institution Intermediate Examination, or equivalent.

Applications, stating age, qualifications and experience, with the names and addresses of three persons to whom reference may be made, should be sent to S. G. WOOD, Borough Engineer and Surveyor, not later than MONDAY, 13th November, 1961.

G. C. COOKSON,  
Town Clerk.

Municipal Buildings,  
Old Hill,  
Staffs.

**AMESBURY RURAL DISTRICT COUNCIL.**

FIGHELDEAN AND MILSTON SEWERAGE.

APPOINTMENT OF RESIDENT ENGINEER.

APPLICATIONS are invited from experienced persons for the APPOINTMENT of a RESIDENT ENGINEER to supervise, on behalf of the Council and under the direction of their Consulting Engineers, the contract for the sewerage works of the Parishes of FIGHELDEAN and MILSTON, Wiltshire. The contract will comprise the laying of about two miles of 6in. dia. 9in. dia. sewers and about one mile of 6in. dia. pumping main, and the construction of a twin siphon across the River Avon, and a pumping station.

The salary will be in the range £1,100 to £1,300 p.a. according to experience, and car allowances in accordance with the Scale laid down by the National Joint Council for cars not exceeding 10-h.p. will be paid for travelling on the works.

The appointment, subject to satisfactory service, is expected to last about 18 months, but may be terminated by one month's notice on either side.

Applicants who do not have experience of similar works, should apply in writing to the undersigned not later than 27th NOVEMBER, 1961, giving full particulars of age, qualifications and experience, together with the names of two responsible Engineers to whom reference may be made.

E. M. NOTTAGE,  
Clerk of the Amesbury R.D.C.

Redworth House,  
Amesbury, Wilts.  
31st October, 1961.

## APPOINTMENTS VACANT

## BRITISH GUIANA.

## PUBLIC WORKS DEPARTMENT.

## CIVIL ENGINEERS.

Duties: Responsibility for a District, including construction and maintenance of sea and river defences, building of roads, construction of buildings, and the control of staff. May also be required to take charge of a large building project and to assist on large road construction or sea defence projects.

Qualifications: Candidates should have either a University degree or equivalent recognised by the Institution of Civil Engineers plus two years' practical experience; or have passed, or be otherwise exempt from, Parts I and II of the Final Examinations of the Institution of Civil Engineers, and have had not less than five years' appropriate practical experience. Candidates should have experience in handling work by direct labour and by contract.

Terms of Appointment: On contract for one tour of three years in the first instance.

Emoluments (including gratuity): £1,347-£1,715 p.a. Free passages. Generous home leave.

Application Forms, to be obtained from the PUBLIC WORKS DEPARTMENT, Department of Technical Co-operation, Carlton House Terrace, London, S.W.1, quoting RC.210/16/01/D14, and giving full name, age, and brief details of qualifications and experience.

## BOROUGH OF STAFFORD.

## APPOINTMENT OF SENIOR ASSISTANT ENGINEER.

APPLICATIONS are invited for the ABOVE APPOINTMENT on the Permanent Staff of the Borough Engineer and Surveyor's Department, in accordance with Grade A.P.T. IV (£960-£1,140); commencing salary according to qualifications and experience.

Preference will be given to applicants who have passed either the Testamur Examination of the Institution of Municipal Engineers, or Parts 1 and 2 of the Institution of Civil Engineers. Previous municipal engineering experience is desirable but not essential.

The Borough is developing rapidly, and the appointment offers excellent opportunities for experience on highway improvements, main drainage and sewage disposal.

Housing accommodation, if required, will be made available to the successful applicant, and the Council are prepared to make a contribution towards removal expenses.

Applications, together with the names of two gentlemen to whom reference may be made, should be forwarded to T. H. HIGSON, A.M.I.C.E., M.I.Mun.E., Borough Engineer and Surveyor, Mount Street, Stafford, not later than SATURDAY, 18th November, 1961.

T. BROUGHTON NOWELL,  
Town Clerk.

## CITY OF LEICESTER.

## NEW SEWAGE DISPOSAL WORKS, WANLIP.

## APPOINTMENT OF TEMPORARY INSPECTOR.

APPLICATIONS are invited from persons with suitable experience in the supervision and control of extensive reinforced concrete works, to work under the direction of the Resident Engineer, at a salary of £17 per week, with customary overtime as worked in civil engineering.

The Scheme has been designed by MESSRS. J. D. ANDREW & M. WATSON Consulting Engineers, London. The Local Government Superannuation Acts apply.

Applications, stating age, experience, and the names of two referees, to the undersigned not later than MONDAY, 20th November, 1961.

JOHN L. BECKETT, M.I.C.E.  
City Surveyor.

Town Hall,  
Leicester.

## BENFLEET URBAN DISTRICT COUNCIL.

## RESIDENT ENGINEER.

APPLICATIONS are invited for the TEMPORARY APPOINTMENT OF RESIDENT ENGINEER to supervise sewerage works under instructions of the Council's Consulting Engineers, MESSRS. LEMON & BLIZARD. The probable duration of the appointment is one year.

The Conditions of Employment will be in accordance with the National Scheme of Conditions of Service and the salary will be within Grade A.P.T. III (£860 to £1,140 p.a.).

Applicants should have had at least five years' experience of the supervision of works, comprising sewers, manholes, etc. They must be competent in the use of a level, in keeping records, setting-out, measuring up, checking measurements, and preparing reports.

Applications, stating particulars of age, qualifications and experience, and the names and addresses of two persons to whom reference may be made, must be received by the undersigned not later than MONDAY, 20th November.

D. GRUDGINGS,  
Clerk of the Council.

Council Offices,  
Thundersley, Essex,  
9th November, 1961.

## WYCOMBE RURAL DISTRICT COUNCIL.

## ENGINEER AND SURVEYOR'S DEPARTMENT.

## APPOINTMENT OF ENGINEERING ASSISTANTS (TWO).

APPLICATIONS are invited for the ABOVE PERMANENT POSTS: (a) A.P.T. II (£815-£960); (b) A.P.T. III (£960-£1,140).

An essential user travelling allowance will be paid, and the Council will assist in providing housing accommodation if required.

N.J.C. Condition of Service will apply.

The Council are engaged in an extensive programme of sewage schemes, and the person appointed for each post will have exceptional opportunities for supervising contract work in progress, and designing and preparing new schemes.

For Post (a), preference will be given to persons who have completed their professional training and/or have passed intermediate or equivalent examinations of the Institution of Municipal or Civil Engineers; and for Post (b), applicants should have passed the Final Examinations of either of the same Institutions.

The starting point for each post will depend on experience and qualifications.

Applications, giving age, particulars of present and past appointments, details of experience, and the names of two referees, to be submitted to the Engineer and Surveyor, 8 Easton Street, High Wycombe, before 24th NOVEMBER, 1961.

It must be quite clearly stated which of the two posts is applied for.

L. C. RYSDALE,  
Clerk of the Council.

17 High Street,  
High Wycombe.

## APPOINTMENTS VACANT

## LANCASHIRE COUNTY COUNCIL.

## COUNTY SURVEYOR'S DEPARTMENT.

An ENGINEERING ASSISTANT is REQUIRED for private street works, for which applicants must be a member of the appropriate branch of the Institution. The salary grade is A.P.T. III (£960-£1,140), or A.P.T. IV (£1,140-£1,310), and the commencing salary will be according to qualifications and experience. The post is superannuable and subject to satisfactory medical report.

Applications, giving details of age, education, qualifications and experience and quoting Ref. 132/12, together with the names and addresses of two referees, to be received by the COUNTY SURVEYOR, P.O. Box 9, County Hall, Preston, by 24th NOVEMBER.

## METROPOLITAN BOROUGH OF FULHAM.

## BOROUGH ARCHITECT'S AND HOUSING DEPARTMENT.

CLERKS OF WORKS for: (i) multi-storey block library, Civil Defence headquarters, and housing; (ii) baths, public laundry and library, and (iii) multi-storey housing. Experienced reinforced concrete, new materials and finishings.

Salary, according to experience, in range £19/£23 per week. Duration of work, two years in first instance.

Application Forms, to be returned by 21st NOVEMBER, from TOWN CLERK, Town Hall, Fulham, S.W.6.

## BOROUGH OF TOTTENHAM.

APPLICATIONS are invited for an ESTABLISHED POST of ESTIMATING AND COSTING SURVEYOR in the Borough Engineer and Surveyor's Department, A.P.T. Grade II (£815 to £960 p.a. plus London Weighting allowance). Commencing salary according to experience and ability.

Application Form and Conditions of Appointment, which should be returned not later than the 20th NOVEMBER, 1961, are obtainable from the Borough Engineer and Surveyor (C.J.), Town Hall, Tottenham, N.15.

M. LINDSAY TAYLOR,  
Town Clerk.

## CORPORATION OF MANCHESTER.

## CITY ARCHITECT'S DEPARTMENT, MANCHESTER.

## CHIEF BUILDING ENGINEER—J.N.C. "F"

£2,015 to £2,345.

This is a new post of considerable responsibility. The person appointed will be one of the six Divisional Heads in the Department, and he will be responsible for the administration of the Division dealing with the structural, electrical, heating, ventilating and mechanical engineering work undertaken by the Department.

The possession of an appropriate University degree or charter qualification is essential, and applicants must have had wide experience as Building Engineers. Full-day week. Housing accommodation. Removal expenses.

Write to the CITY ARCHITECT, Town Hall, Manchester, 2, for further particulars and Form of Application. Closing date: 24th NOVEMBER, 1961.

## CAMBORNE - REDRUTH URBAN DISTRICT COUNCIL.

## APPOINTMENT OF ENGINEERING ASSISTANT (WATER)—GRADE A.P.T. IV/V.

APPLICATIONS are invited for the APPOINTMENT of an ENGINEERING ASSISTANT in the Engineer and Surveyor's Department, Camorne, in connection with the Council's Water Undertaking.

Applicants must be Associate Members of the Institution of Civil Engineers and/or hold the Testamur of the Institution of Municipal Engineers, and have had experience in water supply and of general local authority engineering work. The starting salary will be within Grades A.P.T. IV and V according to the experience of the successful candidate. Car allowance on the Essential User basis will be paid.

Consideration will be given to the provision of housing accommodation if required.

Information about the Council's Water Undertaking, Local Government Superannuation Acts 1937-53, to the National Joint Council's Conditions of Service, and is terminable upon the expiration of one month's notice, in writing, by either side.

The successful applicant will be required to pass a medical examination to be carried out by the Council's Medical Officer of Health.

Canvassing, either directly or indirectly, will be a disqualification, and applicants must disclose their relationship to any member or senior officer of the Council.

Applications, giving the names of two persons to whom reference may be made, should be forwarded to the Council's Engineer and Surveyor not later than MONDAY, 20th November, 1961.

S. C. WILSON,  
Clerk to the Council.

## COUNCIL OFFICES, CAMBORNE, CORNWALL.

## WORTLEY RURAL DISTRICT COUNCIL.

## ASSISTANT ARCHITECT OR ARCHITECTURAL DRAUGHTSMAN.

APPLICATIONS are invited for the ABOVE APPOINTMENT in the Department of the Engineer and Surveyor.

Salary payable in accordance with A.P.T. II or the National Scales of Salaries (£815-£960 p.a.), according to experience.

Person will be expected to work on their own initiative and carry out design and detailing of small and medium-sized works, with scope for own ideas.

Applications, on form to be obtained from the undersigned, to be returned not later than MONDAY, 27th November, 1961.

Housing accommodation offered if required.

ADRIAN M. KELLY,  
Clerk of the Council.

Council Offices,  
Grenoside,  
Sheffield.

COMPETENT SURVEYOR REQUIRED for measurements and computation of quantities on earthmoving contracts in Midlands. Permanent, pensionable position to the right man.—State age, qualifications, experience, salary required, and when free to take up appointment, to R. A. DAVIES (MIDLANDS) LTD., AND PARTNERS, 102 Hartshill Rd., Birmingham, 34.

WANTED, Experienced first-class CIVIL ENGINEERING SURVEYOR. Required for surveying and use of using instruments and controlling road and building contracts. Must be prepared to travel in the Midlands area. High salary and bonus scheme in operation. Apply in writing to MOBRAD (MIDLANDS) LTD., Pensnett Trading Estate, Brierley Hill, Staffs.

## APPOINTMENTS VACANT

## CLASSIFIED ADVERTISEMENT RATES:

Classification	First Four Lines or Less	Each Additional Line
APPOINTMENTS VACANT	12/-	2/-
APPOINTMENTS WANTED	7/6	1/-
WORK REQUIRED, BUSINESS OPPORTUNITY, BUSINESSES FOR SALE, DIVING, FINANCE, PRO- FESSIONAL SERVICES, AGENCIES, HORTICUL- TURAL, PROPERTY, SALE BY AUCTION, PLANT AND MISCELLANEOUS	14/-	3/-
BOX NO. 1/- EXTRA.		

CONTRACTORS (specialists) near Luton REQUIRE a man aged 25-35 years, attached to head office, per week. Duration of work, two years in first instance.

Application Forms, to be returned by 21st NOVEMBER, from TOWN CLERK, Town Hall, Fulham, S.W.6.

## CIVIL ENGINEER

ENGINEER REQUIRED for design work in head office planning department. Position offers good experience in a wide variety of construction work with prospects of advancement in a rapidly growing organisation. Engineering qualification, coupled with some site and/or desk experience necessary. Opportunity and encouragement for achieving Associated Membership Apply to:

Chief Engineer,  
SHEPHERD, HILL AND CO., LTD.,  
Central Chambers, Ealing, London, W.5.

## D. T. BULLOCK AND CO., LTD.

REQUIRE an ESTIMATOR. A man aged 25-32 with previous contractors' experience may find the job that he is looking for with us. He must be experienced in pricing contracts in the industrial building and civil engineering field. The prospects are good. Apply, in confidence, to:

Managing Director,  
D. T. BULLOCK AND CO., LTD.,  
Aldridge, Staffs.

WELL-KNOWN civil engineering contractor REQUIRES SENIOR ENGINEERS, over 25 years, for appointments in the Midlands and Home Counties. Applicants must have good general duties experience and able to take charge. The positions offer excellent opportunities and will become permanent. First-class salaries, with pension scheme. Details of experience and qualifications should accompany applications. Write to Box V.5024, "The Contract Journal."

## SITE AGENT

REQUIRED for multi-storey in-situ reinforced concrete framed building in Manchester. Applicants must be capable and planning conscious and have had previous experience in this type of work.—Reply, stating age, experience and salary required, to:

BOX V.5144, "THE CONTRACT JOURNAL."

CIVIL ENGINEER REQUIRED in the North Staffordshire area. This appointment provides an excellent opportunity for a capable man with experience of roadworks, drainage and bulk excavation contracts. Commencing salary £1,200-£1,500 p.a. Bonus and pension scheme. Car provided.—Written applications, in strictest confidence, giving full details of experience, age, etc., to Box V.5107, "The Contract Journal."

## SENIOR CIVIL/HIGHWAY ENGINEER

REQUIRED. A.M.I.C.E. and/or A.M.I.Mun.E. Experience in design and execution in the United Kingdom of modern highway construction essential. Tunnelling and drainage experience an advantage. Salary according to qualifications and experience. Pension scheme. Apply for application form to:

General Manager,  
HOWARD HUMPHREYS AND SONS,  
West Street, Epsom.

CHALLENGE—REQUIRED in the West Midlands, a man who thoroughly understands the purchase and sale of contractors' plant. He is required to start from scratch and build up a completely new department. Age no bar, but experience and proof of capability is essential. State present earnings, age, and total income expected.—Write Box V.5048, "The Contract Journal."

## APPLICANT REQUIRED

Interested in the increasingly important field of Production Control. A basic understanding of progressing, method study, and labour and material control is necessary. L.I.O.B., H.N.C. or H.N.D. (Building) preferred but not essential.

Apply, giving full particulars, to:

The Manager, Contracts Division,

H. C. JANES, LTD.,

163 High Town Road, Luton, Beds.

## APPOINTMENTS VACANT

**CARPENTERS WANTED** for shuttering.—Apply THOMAS AND EDGE, LTD., Site Office, Contract Journal Building, 32 Southwark Bridge Road, S.E.1. Phone: WAT 2874.

**HUSSEY, EGAN AND PICKMERE, LTD.**

A number of vacancies are available for SENIOR and JUNIOR ENGINEERS on contract sites in England and Wales. Permanent posts with attractive prospects. Apply, with details of education, training and experience, to:

**HUSSEY, EGAN AND PICKMERE, LTD.**, 24 Calthorpe Road, Edgbaston, Birmingham, 15. Telephone: Edgbaston 3661.

**TECHNICAL BUYERS REQUIRED** by Sussex building company. Applicants should be experienced and efficient administrators of a materials section, and be able to liaise with other departments.—Please write, stating salary required, to Box V.5106, "The Contract Journal."

### EDITORIAL ASSISTANT FOR HYDRO-ELECTRIC JOURNAL

**A**N Editorial Assistant is required for a monthly journal specialising in world hydro-electric development. He should hold engineering qualifications, preferably in civil or hydraulic engineering or in corresponding laboratory work. Some practical experience in the hydro-electric or some related field would be an asset. Previous journalistic experience is not a requirement but an aptitude for technical writing is essential, and some knowledge of languages would be useful. The right candidate would be trained with a view to the eventual editorship.

BOX No. V4995, "THE CONTRACT JOURNAL"

### J. I. CASE COMPANY LIMITED

Have a vacancy for a first-class PARTS MANAGER, fully qualified in the latest parts accounting procedure, including mechanised accounts, and stock control. He should preferably have some export experience in this field. He will be resident at the Company's headquarters to be opened in Slough in early 1962. Knowledge of tractors or earthmoving machinery essential.

Please apply in first instance:  
**SERVICE MANAGER,**  
Grangefield Road, Stanningley, Pudsey, Yorks.



### MASSEY FERGUSON INDUSTRIAL DISTRIBUTORS

Require the services of a Man with drive and ability to obtain business.

The position offered is that of Industrial Field Sales Manager for the areas of South Yorkshire and North Lincolnshire.

A good basic salary will be paid to the right man, plus commission and the use of a car.

Write in confidence giving details of Education, Experience and age to: Box V.5121 "The Contract Journal".

### AMERICAN ENGINEERING COMPANY

needs resident engineering staff for rock-fill dam construction project in WEST AFRICA

Positions open for

### CHIEF SURVEYOR, SOIL & CONCRETE LABORATORY TECHNICIAN, and CIVIL ENGINEERS (Office and Field),

with suitable backgrounds.

Salaries from £170 per month with many benefits.

Qualified parties interested should contact:

**KAISER ENGINEERS & CONTRACTORS, INC.,**  
Bow Bells House, Bread Street, London, E.C.4.

## APPOINTMENTS VACANT

**SUPERVISOR** REQUIRED for roadworks contracts in South West area. Experience in measurement and finalising of contracts essential. Duties include the organisation and control of labour. Pension scheme in operation. Permanent post for suitable applicant. Salary commensurate with experience.—Write, stating age and experience, to **V.5125 RECONSTRUCTION CONTRACTING, LTD.**, Garston Road, Frome, Som.

**QUARRY FOREMAN** for quarry in the Midlands producing chippings and pitching. Please state age and experience. Modern house available. **T & S ELEMENT**, Halesowen Street, Oldbury, Birmingham.

**CIVIL ENGINEER** for work in Midlands. Good opportunity for man able to run contracts from initial to final.—Apply Managing Director, **DEMCOR, LTD.**, 264 Highbridge Road, Sutton Coldfield.

### CIVIL ENGINEER

wanted for large Hydro-Electric Development in BRITISH COLUMBIA. Civil Engineer must be Member of Institution of Civil Engineers and fully conversant with the design and driving of Rock Tunnels 10ft. to 50ft. diameter, and to act as Resident Engineer on site.

WRITE BOX C1181,  
c/o Hanway House, Clark's Place, E.C.2.

### Structural Designer

**REQUIRED** by Civil Engineering Contractor. Must be experienced in reinforced concrete design and capable of dealing with schemes without supervision. A permanent position with a well-established expanding organisation which operates staff bonus and superannuation schemes.—For further details and application form, apply, in confidence, giving brief particulars, to:

M. T. Barwick,  
**C. BRYANT AND SON, LTD.**,  
Whitmore Road, Small Heath, Birmingham, 10.

### CIVIL ENGINEERING ESTIMATORS

An expanding International Company of Civil Engineering Contractors require for their Head Office near Victoria Station one senior and one junior estimator.

Applications, stating age, experience and qualifications to Box No. V.5122, "The Contract Journal".

## APPOINTMENTS VACANT

**SENIOR ESTIMATOR** REQUIRED by firm of civil engineering contractors. Head office appointment, Berkshire. Permanent and progressive post, with superannuation scheme in operation.—Write in confidence, stating age, full details of experience with past employers, and salary required, to Box V.5050, "The Contract Journal."

**DUNCAN LOGAN (CONTRACTORS), LTD.**  
SUB-AGENTS and SENIOR SITE ENGINEERS REQUIRED for contract sites in Central Scotland. Apply, in writing, giving full details of age, qualifications, experience, etc., to:

**DUNCAN LOGAN (CONTRACTORS), LTD.**,  
Great North Road, Muir-of-Ord, Ross-shire.

**STOREKEEPER** REQUIRED, preferably with experience of civil engineering plant spares and equipment. Good remuneration to man capable of controlling site stores within large organisation, and prepared to travel.—Write Box V.5116, "The Contract Journal."

### BRITISH JEFFREY-DIAMOND LTD.

invite applications for positions in their drawing offices as

#### DESIGNERS

#### SENIOR DRAUGHTSMEN

#### JUNIOR DRAUGHTSMEN

Interesting work on mining, crushing and constructional equipment, in modern offices and in an expanding organisation, offering opportunity for advancement. Write to the Secretary at Stennard Works, Wakefield, giving details of experience and technical qualifications and quoting Ref. ENG. 1.

### BRITISH JEFFREY-DIAMOND, LTD., REQUIRE

### Testers, Demonstrators and Field Engineers

in their Construction Equipment Division. Applicants having suitable experience with motor graders, shovels, dumpers and/or concrete mixers are invited to write to:

**The Secretary,  
Stennard Works,  
Wakefield**

### Senior Civil Engineer/Agent

**REQUIRED** to control a number of medium-sized contracts in East Midlands. Experience in high-class R.C. work essential. Excellent prospects for man with drive and initiative. First-class salary with participation in company bonus and superannuation schemes.—Applications, in strictest confidence, stating age, experience and present salary, addressed to:

**The Managing Director,  
Thomas Fletcher & Co. Ltd.,  
Forest Road, Mansfield**

### SENIOR ENGINEERING AND SURVEYING ASSISTANT

A VACANCY will shortly occur with a leading firm of estate developers for the above position. Applicants should have had good experience in the design of estate roads and sewers for both large and small developments. He will also be experienced in the preparation of estate layouts. The successful applicant would be required to meet and discuss problems with Local Authorities at top level, and for this purpose a working knowledge of Local Government is essential. The commencing salary would be within the range £900 to £1,000 per annum. This is a permanent progressive position with superannuation.

Apply, in writing, to

**SUPERINTENDING ENGINEER,  
New Ideal Homesteads, Ltd.**  
61 SOUTH STREET, EPSOM, SURREY

## APPOINTMENTS VACANT

**CONTRACTORS** specialising in the sawing and sealing of prints have a vacancy for **YOUNG MAN** with civil engineering experience. This is an excellent opportunity with favourable prospects of promotion for applicant with initiative and good education to follow up inquiries and supervise contracts.—Write in confidence, giving details of experience, and salary, required, to Box V.5120, "The Contract Journal."

## MARLEY CONCRETE, LTD.

REQUIRE for work in the Greater London area and elsewhere:

## FOREMEN

Experienced in-situ concrete shuttering and precast concrete beam erection.

## ERECTORS

For precast concrete beam work. Experience of formwork and in-situ concrete an advantage. Top rates will be paid by this rapidly expanding company to experienced men, who should write or telephone:

The Construction Manager,  
MARLEY CONCRETE, LTD.,  
Stifford Road, South Ockendon, Essex.  
Telephone: South Ockendon 2354.

**AGENT REQUIRED** for rapidly developing section A in a major building and civil engineering company. Must be capable of handling contracts up to £1m. and with ability to work to keen costs and tight programmes.—Applications, giving details of age, experience, and expected salary, should be addressed to the Personnel Manager (Ref. C.I.), THE MITCHELL CONSTRUCTION CO., LTD., Wharf Works, Peterborough.

## MARLEY CONCRETE, LTD.

A rapidly expanding company, REQUIRES an ASSISTANT to the CONSTRUCTION MANAGER. Young men of good education, preferably with some knowledge of building construction and precast concrete building and beam erection work, who are used to working under pressure and able to administer many contracts running concurrently efficiently, are invited to apply for this interesting and permanent appointment. An excellent salary is offered, together with pension scheme, life and accident insurance and canteen facilities.—Write, giving full details of education and career to date, to:

The Construction Manager,  
MARLEY CONCRETE, LTD.,  
Stifford Road, South Ockendon, Essex.

**A REPRESENTATIVE AND SALES CLERK REQUIRED** for London and Home Counties and sales office, respectively. Interesting and progressive appointments. Letter should have telephone and correspondence, experience. Pension scheme; canteen; social club.—GREENHAM EQUIPMENTS, LTD., Clayton Road, Greenford, Middx. VIKING 3651.

## SERVICE ENGINEER—TRACTOR AND EQUIPMENT DIVISION

**SERVICE ENGINEER REQUIRED** for Nigeria by a leading company who are dealers for the best known lines of earthmoving and other contractors' plant. Applicants should not be more than 30 years of age, have received a sound practical training, and experience in overhauling heavy crawler tractors is essential. Salary according to age and experience, with a minimum of £1.550 inclusive of overseas allowance. Overseas terms include contributory pension fund, furnished accommodation at reasonable cost, passages for family. Tours approx. 21 months, with substantial paid leave.—Write, with full particulars, to:

BOX V.5154, "THE CONTRACT JOURNAL."

**JUNIOR CHEMIST REQUIRED** for asphalt and macadam testing at works near Staines Middx. Writing skills, experience and salary required, to SURREY BITUMINOUS SUPPLIES, LTD., Littleton Lane, Shepperton, Middlesex.

**ASSISTANT ENGINEERS** age 20/30, REQUIRED for turnkey contracts in London. Experience in turnkey and setting-out desirable.—Apply KINNEAR MOODIE AND CO., LTD., 299 Hither Green Lane, London, S.E.13.

## ASSISTANT PLANT SERVICE MANAGER

Applications are invited from apprentice-trained Engineers between the ages of 20 and 36, with sound practical experience of building and civil engineering contractors, plus H.N.C. or similar qualifications would be an advantage. The successful applicant will be responsible to the Plant Service Manager for preventive maintenance and servicing of a wide range of contractors' plant on sites and in workshops, in addition to the effective operation of after-sales service of plant and machinery sold by the company. A sound knowledge of plant applications and ability to advise on site requirements is essential. He will be primarily concerned with the company's main field of operations in Yorkshire and Lancashire, though a branch also exists in South Wales and a limited amount of travel may be involved. This is a permanent appointment offering a progressive salary, together with entirely non-contributory pension and life insurance. Attractive staff conditions include a five-day week and three weeks' annual holiday. A car will be provided and assistance with housing, if required. Initial applications, giving brief details, should be addressed for the personal attention of:

Colin Shepherd, Managing Director,  
MECHPLANT, LTD.,  
Blue Bridge Lane, York.

**SETTING-OUT ENGINEER WANTED.** Accurate instrument man essential. Good prospects for promotion for young man preparing to travel in U.K. Write Box V.5117, "The Contract Journal."

**SENIOR GENERAL FOREMAN REQUIRED** by Midland contractors, for supervision of contracts of £300,000 upwards, for ultimate promotion to Contracts Manager.—Write in the first instance, stating age and experience, to Box V.5105, "The Contract Journal."

**ASSISTANT GENERAL FOREMAN REQUIRED** for a housing site near Oxford. The position would suit a Joiner Foreman seeking advancement.—Apply in first instance, stating age and experience, to W. J. SIMMS AND CO., LTD., 133 Marshall Lake Road, Shirley, Solihull, Warwickshire.

## APPOINTMENTS VACANT

**SURVEYOR/ESTIMATOR REQUIRED** by building and civil engineering contractors. To work under minimum supervision. Prefer permanent and progressive. Applications in strict confidence, stating age, experience, salary, and when available, to W. SNAPE AND SONS, LTD., Clifton House, Clifton Road, Eccles, Lancs.

## SURVEYOR

For the head office of C. J. SIMS, LTD., Building and Civil Engineering Contractors, 2 Victoria Street, S.W.1 Age 28-35. Applicant must be experienced in all phases of building surveying, from site measuring to preparation of final accounts, including the building-up of rates.—Apply, in confidence, giving age, complete details of training, experience and salary required, to:

C. J. SIMS, LTD.,  
2 Victoria Street, S.W.1.

**LANDSCAPE SURVEYOR/SUPERVISOR.** Surveyor with successful experience of competitive tendering and supervision of landscape work, including soilings, turfing, seeding and planting for public authorities in London and Home Counties districts. Provide brief record of past experience, age, and salary required.—Write Box V.5137, "The Contract Journal."

**EXPERIENCED CLERK OF WORKS REQUIRED** for supervision of building of department store and multi-storey car park in Shemfield. Salary according to experience and ability.—Apply, stating age and experience, in writing, to YORKE, ROSENBERG AND MARDALL, 2 Hyde Park Place, W.2.

## ASSISTANT SURVEYOR

**REQUIRED** for the head office of building and civil engineering contractors in Westminster. Age 20-25. Applicants must be experienced in all phases of building surveying from site measuring to assisting with preparation of final accounts.—Apply, in confidence, giving age, complete details of training, experience and salary required, to:

C. J. SIMS, LTD.,  
2 Victoria Street, S.W.1.

**SITE ENGINEER REQUIRED** by public works contractors. Private company. Good salary and opportunities. Aged 21-30. Preferably from S.E. England; willing to live on contracts in that area. Experienced in sewage and reinforced concrete work. Written training, experience and salary expected, to A STREETER AND CO., LTD., Public Works Contractors, Godalming Surrey.

**CIVIL ENGINEERING ASSISTANTS**, preferably aged 25 to 35, REQUIRED, with several years' experience in the design of works of sewerage, sewage disposal and water supply. Qualifications and experience determine starting salary. Staff pension scheme. Applications, stating age, qualifications, appointments held, and experience, together with the names and addresses of referees, should be addressed to WILLCOX, RAIKES AND MARSHALL, Chartered Civil Engineers, 33 Great Charles Street, Birmingham, 3.

For Advertisements received too late for classification see page 201

## APPOINTMENTS WANTED

**SENIOR AGENT/CONTRACTS MANAGER** (36) SEEKS POST. Extensive experience in medium and heavy engineering, including prestressed concrete bridgeworks, large diameter sewers, etc. Ability to control office and site staffs, and negotiate at top-level with consulting engineers.—Write Box W.5093, "The Contract Journal."

**SCAFFOLDING ESTIMATOR** with good contacts £25,000. NEW APPOINTMENT WITH control over own business, in the London area.—Write Box W.5092, "The Contract Journal."

**SENIOR EXECUTIVE** with public works contractor. Is interested in CHANGE TO SIMILAR POSITION in Southern England. Experienced in complete control of several contracts from estimating to final settlement. Turnover approx. £1m. p.a.—Write Box W.5094, "The Contract Journal."

**SENIOR/AREA AGENT** 37, well versed all types B. and C.E. contracts, REQUIRES PERMANENT PROGRESSIVE POSITION in any area. Used full control large contracts. Conscientious and reliable.—Write Box W.5129, "The Contract Journal."

**SENIOR AGENT/ESTIMATOR** (46) DESIRES CHANGE, wide experience, diverses roads, reinforced concrete, bridges, piling, sea defence works, heavy excavations, etc. Competent estimator. Position offering scope for advancement only considered. Please write Box W.5131, "The Contract Journal."

**AREA AGENT/CONTRACTS MANAGER** to control a group of contracts, all stages from tender to final account. Training and experience cover full range of civil engineering and building works. Capable, cost-conscious administrator capable of producing exceptional results.—Write Box W.5132, "The Contract Journal."

**ENGINEER/AGENT SEEKS NEW APPOINTMENT** on completion of present contract (approx. February, 1962). Presently engaged in the construction of large-diameter tunnels, wedgeblock segment and timber headings, reinforced and prestressed bridges, power station, deep sewers in open cut, and the construction of sewage disposal works.—Write Box W.5148, "The Contract Journal."

**CIVIL ENGINEER**, B.Sc., A.M.I.C.E., age 33. DESIRES CHANGE as Engineer/Agent or Sub-Agent on large contract with established company: preferably London or Midlands. Varied experience, reinforced concrete and prestressed work, marine, motorways, heavy foundations, site administration and labour control.—Write Box W.5149, "The Contract Journal."

**YOUNG EXECUTIVE** (34), experienced all sections of development, building and light civil engineering. DESIRES CHANGE, preferably a post in private development requiring initiative and responsibility. Present salary £1,500 p.a. plus; Essex area.—Write Box W.5150, "The Contract Journal."

**YOUNG MAN** (36), O.N.C., M.N.C., work study trained, practical experience in work study planning, bonus, personnel officer, **REQUIRES RESPONSIBLE POSITION** with progressive company, preferably North West, but will move anywhere if necessary.—Write Box W.5151, "The Contract Journal."

## APPOINTMENTS WANTED

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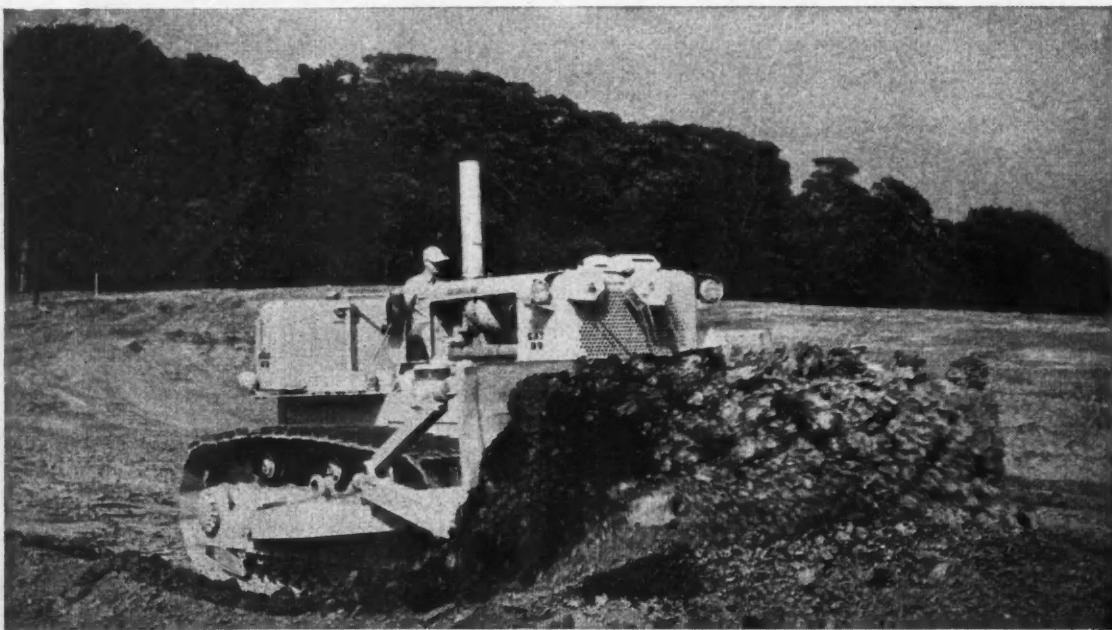
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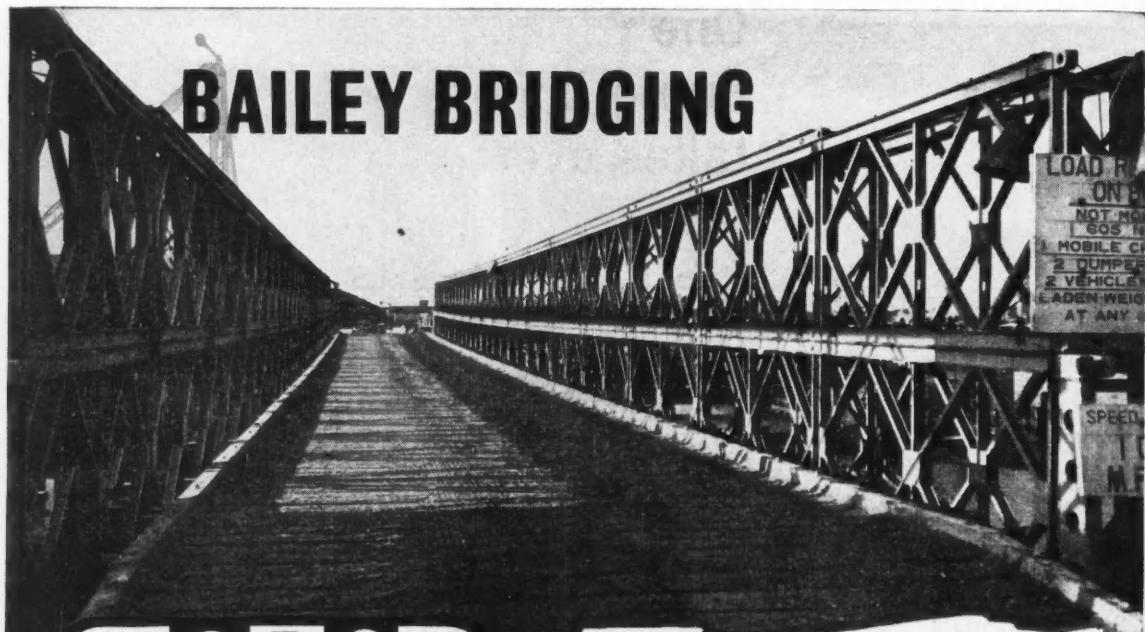
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### COUNTY COUNCIL OF MIDDLESEX.

WESTERN AVENUE, A.40, ACTON—  
PEDESTRIAN SUBWAY.

TENDERS are invited for the CONSTRUCTION of a PEDESTRIAN SUBWAY under Western Avenue, at ALLAN WAY, Acton, including the Provision of Approach Ramps and Steps.

Contract documents may be obtained, and Plans examined at the Office of the County Engineer and Surveyor, Middlesex House, 20 Vauxhall Bridge Road, London, S.W.1, upon deposit of £10, returnable on submission of a bona-fide Tender.

Tenders are to be returned to the undersigned, in the envelope provided, by no later than Noon on THURSDAY, the 4th January 1962.

The County Council does not bind itself to accept the lowest or any Tender.

KENNETH GOODACRE,  
Clerk of the County Council.

The Guildhall,  
S.W.1.

### EAST RIDING OF YORKSHIRE COUNTY COUNCIL.

TENDERS are invited for the SUPPLY and DELIVERY to MARKET WEIGHTON of 2,400 lin. yd. 5in. x 10in. HYDRAULICALLY PRERESSED CONCRETE CORRUGATED KERBS.

Forms of Tender may be obtained from the County Surveyor, County Hall, Beverley.

Tenders in plain sealed envelope which will be provided by the County, endorsed "Tender for Concrete Corrugated Kerbs," are to be delivered to the undersigned not later than 4 p.m. on MONDAY, 20th November, 1961.

The Council do not bind themselves to accept the lowest or any Tender.

R. A. WHITLEY,  
Clerk of the County Council.

County Hall,  
Beverley.

3rd November, 1961.

### SLough BOROUGH COUNCIL.

PARLAINT PARK HOUSING ESTATE—  
COMPLETION WORKS—STAGE I.

FIXED-PRICE TENDERS are invited from experienced civil engineering contractors for the CONSTRUCTION of approx. 32,500 sq. yd. of Tin-ASPHALT SURFACED CARRIAGeway, 8,500 sq. yd. of Tarmacadam Footway, 2,000 sq. yd. of Concrete Garage Aprons, together with ancillary works.

The works will have to be carried out in stages at houses to be completed, extending over a period of approx. 15 months.

Specifications, Bills of Quantities and Forms of Tender are obtainable from the BOROUGH ENGINEER, Town Hall, Slough, Bucks., on payment of a deposit of Two Guineas which will be refunded on receipt of a bona-fide Tender. Tenders and returns of all documents, Drawings and Conditions of Contract may be inspected at the Borough Engineer's Office during normal office hours.

Tenders, on the prescribed form, must be returned in the envelope provided not later than 12 Noon on TUESDAY, 28th November, 1961.

The Council do not bind themselves to accept the lowest or any Tender.

D. G. JAMES.  
Clerk of the Council.

Town Hall,  
Aberdeare.

2nd November, 1961.

### CITY AND COUNTY OF BRISTOL.

TENDERS invited for SUPPLY of CRAWLER LOADING SHOVELS of 1 to 1½ cu. yd. capacity. Forms of Tender and Specification from CITY ENGINEER AND PLANNING OFFICER, Cabot House, Deanery Road, Bristol, 1, returnable by 27th NOVEMBER.

### THE URBAN DISTRICT COUNCIL OF ABERDARE.

ALUMINIUM BUNGALOWS—REPAIRS.

TENDERS are invited for REPAIRING 94 ALUMINIUM BUNGALOWS owned by the Council. Specifications and Forms of Tender may be obtained from the Engineer and Surveyor's Department, Vestry Hall, Aberdare.

Tenders, in plain sealed envelopes, bearing no mark or indication of the sender, but endorsed "Repairs—Bungalows," must reach me on or before FRIDAY, 8th December, 1961.

D. G. JAMES.  
Clerk of the Council.

Town Hall,  
Aberdare.

2nd November, 1961.

### TONBRIDGE URBAN DISTRICT COUNCIL.

DRAINAGE—CONTRACT NO. 3.

CENTRIFUGAL PUMPING PLANT.

The Tonbridge Urban District Council is prepared to receive TENDERS on a Fixed-price Basis for the MANUFACTURE, SUPPLY and ERECTION of SIX SELF-PRIMING ELECTRICALLY DRIVEN VERTICALLY ARRANGED UNCHOKABLE DRAWDAGE PUMPS, together with Ancillary Equipment.

The plant will be contained within two pumping stations. Two sets shall each be capable of a duty of 300 g.p.m. against a total head of 28ft. comprising one installation; two further sets each capable of duty of 450 g.p.m. and the remaining two sets capable of duty up to 900 g.p.m. The latter four sets represent the second installation which is to work against maximum head conditions of 42ft.

All the above shall be in accordance with the Specification and Drawings prepared by the Consulting Engineers, MESSRS. JOHN TAYLOR AND SONS, Artillery House, Artillery Row, Westminster, S.W.1.

Copies of the Specification and Drawings and Form of Tender may be obtained from the Offices of the Consulting Engineers on payment of £5 (cheque or money order to be sent to the Urban District Council), which will be returned on the receipt of a bona-fide Tender not subsequently withdrawn.

The Specification and Drawings may be inspected at the Offices of the Consulting Engineers or at the Offices of the Council's Engineer, Tonbridge Castle, Tonbridge, Kent.

Tenders, in plain sealed envelopes endorsed "Tonbridge U.D.C. Drainage—Contract No. 3—Pumping Plant," are to be delivered to the Clerk of the Council not later than Noon, MONDAY, 18th December, 1961.

The Council do not bind themselves to accept the lowest or any Tender.

S. J. THORNE.  
Clerk of the Council.

Tonbridge Castle,

Tonbridge, Kent.

6th November, 1961.

### EAST SUFFOLK COUNTY COUNCIL.

CONTRACT NO. 50.

JUNCTION A.145—FOOLS WATERING,  
HENHAM SECTION.

TENDERS are invited for the RECONSTRUCTION of 1,100 lin. yd. of TRUNK ROAD, A.12, between the Junction with A.145 (Beccles Road) and Fools Watering, Henham.

Construction will comprise Granular Sub-base, Thin Lean Concrete Base, and Hot Rolled Asphalt Surfacing, Kerbing, Fencing, Culvert and Drainage Works are also included.

Tender documents, available from County Surveyor, County Hall, Ipswich, upon deposit of the sum of £10, returnable on receipt of a bona-fide Tender.

Tenders must be received by the CLERK OF THE COUNCIL not later than 10 a.m. on FRIDAY, 24th November, 1961.

The Council do not bind themselves to accept the lowest or any Tender.

County Hall,  
Ipswich.

Ipswich.

NORTHAMPTON COUNTY BOROUGH EDUCATION COMMITTEE.

CENTRAL COLLEGE OF FURTHER EDUCATION—ALTERATIONS—PHASE VII, PART 2.

Contractors wishing to TENDER for the SECOND PART of PHASE VII of the ALTERATIONS PROGRAMME, consisting of Structures, Materials, Improvements and Redecorations to Various Rooms at the College of Technology and School of Art, St. George's Avenue, Northampton, should apply to the Borough Architect, Guildhall, Northampton, forthwith, enclosing a crossed cheque for Two Guineas, payable to Northampton Corporation.

Deposits will be refundable only upon receipt of a bona-fide Tender not subsequently withdrawn, by the 13th DECEMBER, 1961.

The Education Committee do not bind themselves to accept the lowest or any Tender, or to pay any costs incurred by persons tendering.

H. A. SKERRITT,  
Springfield,  
Northampton.  
Chief Education Officer.

### BOROUGH OF CAMBERWELL.

TREE FELLING.

TENDERS invited for the REMOVAL and DISPOSAL of 60 TREES on the Footway in Camberwell.

Addressed to the Clerk of the BOROUGH ENGINEER AND SURVEYOR, Town Hall, Camberwell, S.E.5. Closing date: 23rd NOVEMBER.

### CITY OF MANCHESTER.

TENDERS invited for the ERECTION of a PUBLIC CONVENIENCE at FORGE LANE, Bradford.

Bill of Quantities from the CITY ARCHITECT, P.O. Box 488, Town Hall.

Tenders returnable by 29th NOVEMBER.

### BILLINGHAM URBAN DISTRICT COUNCIL.

STREET LIGHTING.

TENDERS are invited from manufacturers and contractors for ALL OR ANY of the FOLLOWING CONTRACTS:

CONTRACT NO. 1—Supply of 104 Concrete Columns.

CONTRACT NO. 2—Supply of 115 140-W Sodium Lanterns.

CONTRACT NO. 3—Erection of 104 Columns and Lanterns.

Tender documents can be obtained from the Engineer and Surveyor, Council Offices, Haverton Hill, Billingham, Co. Durham, on payment of a deposit of £1.1s. for each Contract required.

Tenders, endorsed "Street Lighting," to be delivered to the undersigned not later than 10 a.m. on MONDAY, 27th November, 1961.

The Council do not bind themselves to accept the lowest or any Tender.

FRED. M. DAWSON,  
Clerk of the Council.

### CARSHALTON URBAN DISTRICT COUNCIL.

REMOVAL OF FOREST TREES.

TENDERS are invited for the REMOVAL of approx. 36 FOREST TREES in VARIOUS ROADS in the district.

Form of Tender, Specification and Bill of Quantities may be obtained from the Office of the Engineer and Surveyor, Stone Court, The Grove, Carshalton, Surrey, CR4.

No Tender will be accepted unless in a plain sealed envelope addressed to the Chairman of the Council, at these Offices, and delivered not later than 12 Noon on WEDNESDAY, 29th November, 1961.

The Tender must be endorsed "Removal of Forest Trees" but must not bear any name or mark indicating the sender.

The Council do not bind themselves to accept the lowest or any Tender.

C. H. DURRANT,  
Council Offices,  
The Grove,  
Carshalton, Surrey.

### WATFORD RURAL DISTRICT COUNCIL.

SIX FLATS—ALEXANDRA ROAD, SARRATT.

The Council invite contractors to apply for the supply of Forms of TENDER, Plans and Bills of Quantities for the FOLLOWING:

(a) The Demolition of an existing group of three Cottages and Outbuilding; and

(b) The Erection on the site of a Two-storey Block of Six One-Bedroom Flats.

The documents will be available for dispatch to applicant contractors after the 17th November, 1961, and Tenders, in the pre-addressed envelopes, which will be provided for the purpose, must be lodged not later than MONDAY, the 11th December, 1961.

The tenders must be made on a Form of Bid.

Application for the documents should be made to me, accompanied by a deposit of £2 2s., which will be refunded, subject to the receipt of a bona-fide Tender or the return of the documents.

S. A. NICHOLSON,  
Clerk to the Council.

### THE CONTRACT JOURNAL.

THE CONTRACT JOURNAL.

### BOROUGH OF MAIDSTONE.

BREWER STREET CAR PARK.

TENDERS are invited for the CONSTRUCTION of the ABOVE. All documents may be obtained from the Borough Engineer, Palace Avenue, Maidstone. Tenders to be received by me by 10 a.m. on 27th NOVEMBER, 1961.

T. SCHOLES,  
Town Clerk.

### BOROUGH OF DAGENHAM.

PRIVATE STREET WORKS—FELHURST CRESCENT.

TENDERS are invited for this WORK, which consists of approx. 500 sq. yd. of Reinforced Concrete Pavement, with Kerb Paving and Sealing Works. Plans and Sections may be inspected, and Specifications, Conditions of Contract, Forms of Tender and Engineer and Surveyor on payment of a deposit of £2 2s., refundable on receipt of a bona-fide Tender documents. Closing date: 27th NOVEMBER, 1961.

KEITH LAUDER,  
Town Clerk.

### ESHER URBAN DISTRICT COUNCIL.

ANNUAL CONTRACT FOR TRENCH REINSTATEMENT AND CONSTRUCTION OF FOOTWAY CROSSINGS FOR THE PERIOD OF 12 MONTHS COMMENCING 1ST APRIL, 1962.

TENDERS are invited for the REINSTATEMENT of TRENCHES and CONSTRUCTION of FOOTWAY CROSSINGS within the Urban District for the year 1962/63.

Forms of Tender, Conditions of Contract, Specification and Schedule of Rates may be obtained from the Engineer and Surveyor and Planning Officer, Esher, on payment of a deposit of £1 1s. refundable on receipt of a bona-fide Tender.

Tenders, on the prescribed form, enclosed in the envelope provided, which must bear my name or mark indicating the sender, should be received by the undersigned not later than 5 p.m. on MONDAY, 20th November, 1961, in accordance with the Conditions of Tender.

A. G. CHAMBERLIN,  
Clerk of the Council.

Council Offices,  
Esher, Surrey.

LEADING company in road materials industry has vacancy for TWO ENGINEERS, aged 25 to 30 years, qualified electrical or mechanical, for supervisorial posts. Good prospects for keen men, leading ultimately to executive positions.—Write full details of experience and age to Box V.5118, "The Contract Journal."

JUNIOR ENGINEERS, age about 25, REQUIRED by well-known and rapidly expanding company engaged in bridge, sewerage, tunnel, heavy foundation and such works. Excellent experience offered. Good salary and pension scheme. Details of experience and qualifications required.—Write to Box V.5023, "The Contract Journal."

SENIOR SITE ENGINEER, qualified, REQUIRED for site supervision of construction of new nuclear power station at Malta. Single man preferred. A.M.I.C.E. and good practical experience in reinforced concrete structures, particularly in regard to concrete control. Write Box V.5140, "The Contract Journal."

TECHNICAL SALES REPRESENTATIVE for specialist contractors operating throughout the country. Contacts with industry, local authorities, docks, River Boards, etc., essential.—Write age, present salary and experience to Box V.5141, "The Contract Journal."

RESIDENT CIVIL ENGINEER REQUIRED for site supervision of construction of new nuclear power station at Malta. Single man preferred. A.M.I.C.E. and good practical experience in reinforced concrete structures, particularly in regard to concrete control. Write Box V.5140, "The Contract Journal."

FULLY EXPERIENCED FOREMAN CARPENTER REQUIRED on construction of Syston Dam, Festiniog Pumped Storage Project.—Please apply, giving details of past experience, to THE CEMENTATION CO. LTD., Civil Engineering Division, Bentley Works, Doncaster.

CONTRACTS MANAGER REQUIRED for Middlesex branch firm of painting and decorating contractors. Must have good all-round experience in tendering for all types of decorating contracts, and have administrative experience.—Apply in writing, stating age, experience, and salary required, to Box V.5138, "The Contract Journal."

AENTS WANTED many areas, on commission, by manufacturers of non-tear waterproof clothing. Must have connections civil engineering contractors, large building contractors and municipal authorities, etc.—Apply giving full details of age, connections, and agencies held. Write Box V.5135, "The Contract Journal."

QUANTITY SURVEYORS REQUIRED for building and civil engineering contracts. They should be fully conversant with all site duties.—Please write, giving full details, to Personnel Dept. (Ref. R.H.), MESSRS. J. MURPHY AND SONS, LTD., 43 Charter Road, London, N.4.

EXPERIENCED ACCOUNTS CLERK REQUIRED by specialist civil engineering contractors at Chelsea. Applicants should have considerable experience in preparation of interim certificates and accounts. Permanent position.—Write to Personnel Dept. (Ref. R.H.), MESSRS. J. MURPHY AND SONS, LTD., 43 Charter Road, London, N.4.

GENERAL FOREMAN, experienced roads, sewers and drains, main required. Good salary and prospect permanency for right man wishing to reside in Poole/Bournemouth area.—Applications, stating age, experience, etc., to G. AND G. F. MAIDMENT (POOLE), LTD., Cranbrook Road, Parkstone, Poole, Dorset.

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# THE CONTRACT JOURNAL

INCORPORATING  
THE BRITISH CONSTRUCTIONAL ENGINEER AND THE CONTRACTOR

**THE CONTRACT JOURNAL**  
incorporating  
THE BRITISH CONSTRUCTIONAL ENGINEER  
and  
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LAWRENCE McCARTHY

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**Advertisements**

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## AN ATTITUDE OF MIND

THE role of employers' organisations in safety must necessarily be an intermediate one. For, as this column remarked a few weeks ago, the solution to the accident problem, like the problem itself, is a human one. Legislation of itself cannot solve it. How wonderful if it could! Nor can exhortation, resignation, exasperation or any of the other emotions that the subject of safety can arouse, for as much as anything else safety is a question of an attitude of mind. Top management must believe in it, give instructions about it, have it regularly on their agenda. Sites must practise it, observe the instructions, see to it that they are observed. Thus a tremendous task of communications arises.

Employers' organisations cannot actually create the fundamentally necessary attitude of mind among management and on site. But they can help with the problem of instruction and communications. For example, safety courses have been set up for supervisors. They provide an essentially practical guide to safety, showing how accidents are caused and how they can be prevented. Such a down to earth approach is vital for site supervisors on whom much of the final responsibility for safety falls. But the construction industry is so vast that these courses, invaluable though they are, can do little more than scratch the surface of the problem. And in any event the fleeting spoken word can be quickly forgotten unless it is caught in print for a wider and more lasting role.

Although the construction industry is well supplied with posters and leaflets about particular accident problems a comprehensive practical guide to safety has been lacking. This need for a safety guide for supervisors has now been filled by the Federation of Civil Engineering Contractors. In the publication of *Supervisors' Safety Booklet* which is described elsewhere in this issue, it is difficult to imagine better advice, better presented. After a short introductory section dealing with general principles of accident prevention the main part of the booklet is devoted to five major groups of accidents, divided as appropriate into sub-sections. Each section is given the same treatment. First the causes of the accidents are briefly described, then some typical accidents from the Federation's records are quoted and finally the safety rules are prescribed. No punches are pulled and the text is concise and to the point.

Some useful appendices are also included, the first of which is a safety check-up list which supervisors can use when going round the site. There is advice on first aid, artificial respiration, safe operation of plant and some useful tables of facts and figures.

The booklet is based on an analysis undertaken by the Federation of 5,500 accidents that occurred on civil engineering sites. The precise proportions in which these accidents occurred within the major groups and their subdivisions is given. These proportions will, of course, vary in different trades. In building for example there will be a greater proportion of accidents due to persons falling and rather less due to mechanical plant, but the booklet is such that every trade should find it of value to its supervisors.

A foreword by Lt.-Col. T. McMillan, chairman of the Federation's Safety Committee states, "Accidents cause pain and suffering, sometimes death. The job of breaking the news to the man's family may fall to you, as the supervisor. You will feel even worse about it if you have a sneaking feeling that, with a little more thought on your part, the accident might have been prevented. Safety is everybody's business but supervisors, which in this case includes everyone from the agent to the ganger or chargehand, have a special responsibility. The purpose of this booklet is to help supervisors prevent accidents on civil engineering sites. So please study it and act upon it."

We hope that supervisors will, not only in civil engineering contracting but in all branches of the construction industry.

## An Economist Comments . . .

### BUILDING PROFITS

RECENTLY, *The Times* carried a two column headline—"W. and C. French return loss of £283,000". Stated thus, the impact is a little startling. But, of course, as the text points out, the adverse result arises from a further heavy loss on one contract, the Crossness contract for the London County Council; continuing losses are being sustained but at a reduced level, and the directors expect that profits elsewhere will be sufficient to ensure an overall net profit for the current year.

This puts the matter into perspective and it is no purpose of mine to comment on the why's and wherefore's of the particular Crossness contract. However, the announcement does provide ground for general comments about building and contracting profits over the last few years. One thing *The Times*, and other papers, may have done, is dispel to some extent the belief that all building and contracting firms, large or small, automatically make high profits year in and year out. In point of fact, of course, building and contracting, particularly on firm-price tenders, is still as risky a business as anything in the country, full order books or no.

There is some interesting information in the 1961 Government Blue Book on National Income and Expenditure. This puts gross profits from construction alongside the gross profits of all industries taken together—with the following results, from 1955.

prices for its work. Nor is it beside the point to quote European and American construction industry data as evidence that contractors in this country charge too little for their contracts. Is pricing today based too much on a rule of thumb? Is more, and fuller, cost information required?

I do not profess to know the answers. But I do feel they are important, even vital. Upon them depend the industry's future rate of investment in men, equipment and machines, its ability to attract newcomers of adequate calibre, the amount of work it does, and so on. Any industry that is out of step on profits is out of step with any free enterprise economy and is stirring up trouble, cumulative at that. The W. and C. French episode may not be typical, but it provides a salutary reminder that a high and rising level of output is not necessarily a guarantee of a healthy industry.

#### Economic Planning

The Government's plans to set up a National Economic Development Council, are, it seems, making fair progress. I keep coming back to this topic because it could, I feel, eventually be a matter of considerable importance to the contracting industry. The Chancellor met the employers' representatives on October 16, and the T.U.C. on October 25. The employers reported afterwards that "We are in tune with the Chancellor on this", and the Treasury referred to a "useful exchange of views on the structure and functions of

Industrial building approvals also seem to be following the same pattern. The latest figures show that new schemes, for which industrial development certificates were issued during the third quarter of this year, numbered 596 covering 11.6 million sq. ft. This compared with 639 schemes covering 13.4 million sq. ft. in the second quarter, and 764 schemes covering nearly 22 million sq. ft. in the third quarter of 1960. Industrial building, it is true, at present accounts for little more than one fifth of the new work programme; but it is also necessary to take into account that public sector building is not now likely to expand very fast and private house building faces difficulties as a result of the credit squeeze. There is no suggestion yet that the load on the industry is reaching a dangerously low level. The latest construction economic pointers merely emphasise the importance of watching the amount of work actually in, or entering, the construction pipeline and then taking the appropriate action in good time.

#### Houses for 1981

To conclude on a more heartening note, I was interested to read that the Alliance Building Society forecast that over the next 20 years 8,000,000 new houses must be built in England and Wales to meet expected demand. To achieve this total, a target of 400,000 houses a year would be required and it would be necessary to increase the present rate of expenditure on construction by rather more than half. I seem to remember that Mr. T. V. Prosser, when president of the N.F.B.T.E. a few years back, also had a figure of 400,000 houses a year in mind; furthermore that he was prepared to justify it not only by the needs of rising living standards, increasing population and earlier marriages and so on, but also by the potential capacity of the construction industry itself. It is good to see that a prominent building society now holds a similar view. I think something like this must recently have been in the mind of the chairman of Eastwoods, Ltd., Sir Thomas Moore. Eastwoods have had a particularly good year and sales and profits have reached new peaks; the firm also plan to expand their capacity appreciably. In assessing the future prospects of the firm, Sir Thomas Moore stated:

"I am convinced that in the long term a large building programme is essential to the health, happiness and prosperity of this country. Slum clearance, better housing, improved roads and new industrial buildings will all be required in massive quantities for at least a decade ahead and these needs will be unaffected whether or not we join the Common Market, though if we do, keener competition generally may well be anticipated. Therefore, apart from temporary crises, due to international tension or balance of payment difficulties, I am confident that a future of great activity lies ahead for the building industry in which Eastwoods are well equipped to take an increasing share."

At least it seems that the most important sectors of the industry are fully aware of what is likely to be required of them.

#### Gross Profits

	CONSTRUCTION				ALL TRADES	£m.
	Gross profits of companies and incomes from self employment				Gross	and other trading incomes
1955	...	...	...	211	5,755	
1956	...	...	...	234	5,967	
1957	...	...	...	232	6,228	
1958	...	...	...	243	6,351	
1959	...	...	...	271	6,917	
1960	...	...	...	266	7,436	

I would direct attention particularly to 1957 and 1960. In these two years profits from construction actually fell compared with the previous year. Industry as a whole, on the other hand, recorded a steady and appreciable advance throughout the period—29 per cent. from 1955, compared with an advance of 25 per cent. from 1955 in the case of construction. Not a result that may have been expected perhaps during a so-called construction boom. It is true that those public companies engaged on construction, taken by themselves, present a more imposing picture. But their figures almost certainly contain something on account of property development, sometimes a very profitable operation; in any case there are relatively few of them. The figures I have quoted refer to the industry as a whole, from the huge national contractors down to the very numerous one-man firms.

The reasons for the relatively poor showing of contracting firms are not easily apparent. Down at the bottom of the scale there is almost certainly an element of inefficiency and over-trading—hence a considerable number of bankruptcies for relatively small deficits. The return to firm-price tendering has also created difficulties in pricing: it is difficult enough to estimate the likely price trend of a particular building material without having to take account of the cost of unforeseeable delays in delivery as well. In the same way, it is not by any means easy to forecast labour costs and labour shortages with any approach to precision. Some would even say that the whole concept of competitive tendering, even when it is selective, is hopelessly outmoded, and that only the spread of negotiated, or near negotiated, contracts will ensure that the industry in general gives, and receives, fair

the new machinery with particular reference to assessments of future growth." The question of a central wages policy, it seems, was not directly discussed, but it is known that a Government study of this is being made.

The T.U.C. was more reticent. Not before the second week of November will it even take the decision on whether to co-operate with the Government and the employers in the establishment of the Council. On the other hand, Sir Alan Birch commented, "We now have the material on which we can reach a decision." Sir Alan also made it clear that the T.U.C. would not participate unless it was reasonably certain that some notice would be taken of the new body. Nor would it enter if the discussions were to be unduly restricted. Furthermore, the T.U.C. feel that control of industrial development should be discussed by the Council at an early date.

#### Economic Pointers

There is further evidence that the contracting load may decline before long. The latest F.B.I. inquiry amongst businessmen clearly indicates that general business optimism is lessening. The order position has deteriorated and investment intentions are tending downwards, particularly as regards building works. Indeed, only 19 per cent. of the sample of businessmen replying to the F.B.I. questionnaire said that they expected to authorise more capital expenditure on buildings next year compared with this. Forty-four per cent., on the other hand, expected to authorise less, and 29 per cent. about the same. These results are, in fact, even less encouraging than those derived from the last F.B.I. Sample Inquiry about four months ago.

#### CONSULTANTS APPOINTED FOR L.C.C. ROAD SCHEMES

The L.C.C. have appointed Husband and Company, 58 Victoria Street, London, S.W.1, as consulting engineers to investigate the planning and preliminary design of the West Cross Route from Holland Park Avenue to just south of King's Road, Chelsea. Rendel, Palmer and Tritton, 125 Victoria Street, S.W.1, have been appointed for similar work in connection with a proposed new road over or alongside the Bexleyheath railway line between Kidbrooke, Woolwich, and the county boundary.

**METEOROLOGICAL  
OFFICE AT  
BRACKNELL**

**New Headquarters  
Building**



Main entrance

A NEW headquarters for the Meteorological Office at Bracknell, Berkshire, was formally handed over last week, by Mr. Richard Thompson M.P., Parliamentary Secretary to the Ministry of Works. To mark the occasion he presented an inscribed key to Sir Maurice Dean, Permanent Under-Secretary of State at the Air Ministry.

The staff of the Meteorological Office is already operating from the new centre, which combines the functions previously carried on from buildings in London, Harrow and Dunstable. Built at a cost of £600,000 by the Ministry of Works, the new building is expected to save time and money by a more efficient and concentrated grouping of staff and services.

The new building occupies a prominent position east of the New Town, overlooking a recently constructed roundabout at the junction of road approaches from London, Windsor, Maidenhead and Bracknell itself.

The building is planned as three distinct, but interconnected, blocks grouped round a central grassed court which is open to the southward.

At its highest point, the building rises to nine storeys—107ft. above entrance floor level—and is flanked on each side by blocks of six and three storeys. They form three sides of a square open on the south side.

The weather forecasting branch occupies the top floor of the nine-storey block in a suite of air-conditioned rooms fitted with large windows each 12ft. 6in. by 10ft.

which run the whole length of the walls and project outwards about 3ft. Much of the furniture and equipment in these rooms has been specially designed by the Ministry of Works to meet the needs of the forecasting staff.

On the floor below is the communications centre, where weather observations over north-west Europe and the eastern Atlantic are collected hourly, and reports from a large part of the northern hemisphere are assembled and transmitted by radio and landline to internationally agreed schedules.

From this communications centre landline teleprinters connect directly with the International Meteorological services of Canada, France, the Federal German Republic and the Netherlands.



General view from south-west

The main rooms on this floor are air-conditioned to make agreeable conditions for the staff who work in shifts throughout the 24 hours.

A digital computer is housed on the fifth floor, and this also is in air-conditioned accommodation. The whole of the room is screened with copper mesh and effectively earthed, and all electricity supplies are filtered to eliminate interference.

On other floors are laboratories for research work, a small printing press operated by H.M. Stationery Office for printing weather charts and forecasts, and two wind tunnels for testing meteorological equipment.

The United Kingdom national library of meteorology and certain other branches of geophysics is situated on the entrance floor level and includes weather records, some dating back to the 18th century or even earlier. At one end is a shaft which rises through four floors of the six-storey block and is used for storing books and records not in frequent use. The interior is lined with metal racking specially designed by the Ministry of Works for the purpose.

#### Design and Construction

As previously stated, three distinct but connected blocks make up the building. Block 1 is a six-storey building, and contains administrative offices, conference rooms, library and book tower, main entrance hall and dining rooms. The latter are designed in the form of a penthouse, opening on to the flat roof of the main building.

Block 2, a three-storey building on the opposite side of the central court, accommodates the instrument division, and consists principally of laboratories and offices for scientific workers together with card index facilities, a small wind tunnel and general purpose workshops.

Block 3—linking the other two—is of nine storeys and rises to a height of 107ft. above entrance floor level. It houses the forecasting and research divisions, communications, Post Office facilities and H.M. Stationery Office printing plant. The boiler house and ventilating plant rooms are located in the basement of this block. At the point of junction between blocks 1 and 3 are the main staircase and lift battery which jointly serves the two blocks.

#### R.C. Construction

The building is of reinforced concrete construction, the exposed framework being of Portland stone aggregate and white cement composition. Floor and roof slabs are of the "plate" type, presenting clear ceiling surfaces uninterrupted by projecting beams.

The frame is based on a 13ft. 4in. grid, and although demountable partitions are not being generally used, provision is made

for additional cross-partitions (if required) to be carried into window mullions and internal glazed framing to corridors.

The elevational treatment is simple in character, expressing as truthfully as possible the constructional framework. The architects have relied for effect mainly upon the massing of units, made possible by the contrasting block heights. Besides contributing to the architectural interest of the building, the eight-storey central block makes economical use of the limited site and leaves greater space for planned future extension.

in block 3 partly above ground level, so reducing the amount of excavation necessary.

It is not proposed to erect fences around the site except on the eastern boundary; the building will, therefore, stand free and unobstructed in its surroundings. Existing trees have been retained wherever possible and a scheme for additional planting is included in the present contract.

Building operations started on July 1, 1959.

The cost of buildings, engineering services and site works (but excluding site



Forecasting room

Coloured panels are introduced below the full-width windows, contrasting with the golden-brown brickwork of flank walls and lift tower.

To preserve as far as possible an unbroken skyline, the concrete framework is taken above roof level on blocks 1 and 3 to form an open screen; behind this such features as tank rooms, instruments or test rigs can be accommodated without detriment to the architectural conception. The canteen and kitchens on the roof of block 1 are also embraced within this open screen.

Because of the falling site, the building is "stepped", the ground floors of blocks 2 and 3 being at the same level as the first floor of block 1. For the same reason it has been possible to set the boiler house

purchase costs) is approximately £600,000, carried out on a firm-price contract. This represents a rate per sq. ft. (gross) of £4 13s.

#### Engineering Services

These provide the forecasting and research staff with special facilities for their work, and generally comprise the following:

#### Incoming Services

The electrical sub-station has a transformer fed at 11,000-V and delivers power at 415/230-V. The connected load is some 1,100-kVA and maximum demand is 750-kVA. The gas supply is for use in the kitchen and laboratories only, and the total capacity is some 2,200 C.F.H.

#### Boiler House

This is centrally positioned and houses two Farratube economic boilers for low pressure hot water heating, and a sectional cast-iron boiler for the summer hot water service and supply to the air conditioning plant. The boilers are oil-fired, the heating boilers having modulating pressure jet burners, using 950 sec. Redwood No. 1 oil. The hot water service boiler has a pressure jet burner using 200 sec. Redwood No. 1 oil. An emergency electric supply is provided to maintain essential services for the forecasting floors. It is by diesel-driven generator of 200-kVA capacity and will start automatically within five seconds of power failure to allow the forecasters to continue their 24-hour service uninterrupted.

#### Heating Installation

The administrative offices are heated by means of cast-iron hospital type radiators, and the majority of the laboratories have sill line convector heaters. The library has under floor heating by embedded hot water coils. The library bookstack is air heated by filtered recirculated air. Humidity control between 55 per cent. and 65 per cent. is provided.

The H.M. Stationery Office printing  
(Concluded on page 221)



Entrance hall looking towards library

## LAND SHORTAGE STILL CHIEF CAUSE OF CONCERN TO HOUSE-BUILDERS

### Call for More Private Development in New Towns

THE acute concern which the land shortage is causing to private house builders was emphasised at both the annual dinner and annual conference of the Federation of Registered House-Builders, held in London last week.

At the annual dinner it formed the theme of the address by the President, MR. HAROLD FORD, and on the following day the subject "The Land Problem" took up the entire morning session of the conference, provoking a spirited discussion.

The task of making proper and full use of land and in so doing accommodating the demands of our still expanding population was described by the President as "the challenge of our age... a headache to the Government, the planners and developers alike." But by the results of their joint efforts, enterprise and ingenuity, he said, we of our time would be judged by future generations for the better part of the next century.

"The land problem", he continued, "requires us to re-adjust our ideas in many respects. In particular I would refer first to the provision of new towns. It is quite clear that many more may still have to be provided if both restriction of growth of the larger conurbations is to be controlled and the Green Belt policy preserved."

"Much has been said and written on the merits and demerits of new towns by those qualified to do so and many who are not, I will not endeavour to compete. I would, however, stress that private house-building participation in these new developments has not been anything like it should be, particularly in the earlier days of their creation. Private house-builders can and are prepared to take their full part in providing houses in the new towns, and we ask the Government to take appropriate steps to make such provision in the machinery of the development of these new projects as is necessary to enable a larger part to be played by private enterprise builders and the erection of private houses."

#### Urban Renewal

"Perhaps the next challenge is the subject of urban renewal; the challenge of slum clearance has in the main been met in the last two decades though much still has to be done. The new problem is now before us and is of increasing urgency. Vast areas around the larger towns are crying out for attention. These twilight areas, not slums but lacking proper amenities by modern standards, monotonous and drab in their repetition, afford an opportunity to architects to pursue new patterns which could revitalise these areas and encourage a tendency to return to city living. Whereas slum clearance was, and remains, a national, social and financial problem, urban renewal is obviously a team job, requiring the collaboration of the Ministry, local authorities and builders in a concerted effort of mutual help, if real progress is to be made."

"We are convinced that not only has private enterprise a large and essential part to play here but also that private enterprise partnership is essential to the successful solution if further national financial burden in the housing field is to be avoided. House builders are willing and ready to play their part. Again we ask the Government to encourage their aid in the solution of this pressing problem."

Mr. Ford then pledged the support of his Federation to the Government in all matters to encourage house-building, but emphasised that the Government would do well to stick to the policy that "Home ownership is best."

"It might well be argued," he said, "that this is a question of £. s. d. and that it

is not everyone's wish to own a house. Our contention is that, given a sound product that is reasonably priced, house purchase is the best proposition. It is our job and challenge as house builders to show that we can successfully compete with other claimants for young people's savings, and to show them that the provision of a soundly built home is within the capacity of anyone with a reasonable job, that it will be a good investment and undoubtedly one of the wisest decisions they are likely to make in their life-time."

The President concluded by saying that it seemed likely that the housing programme this year might be a little down on last year, and that the mystic 300,000 might not be reached. But of this quota some 180,000 or 60 per cent. would have been built by private enterprise, and it was encouraging to note that the trend was for a larger proportion of houses being erected to be built by private builders. However, he pointed out that there was nothing to be complacent about since private builders were still building only about half as many houses per annum as they did before the war.

#### Quantity and Quality

The response to the President's toast of "Her Majesty's Government" was made by EARL JELLINE, D.S.O., M.C., Joint Parliamentary Secretary, Ministry of Housing and Local Government. He dealt with the subject of housing under two headings—Quantity and Quality.

On quantity he said that despite all that had been done since the war by Governments, housing still presented the country with a considerable challenge. We were still grappling with the problems of the industrial revolution and obsolescent properties in the twilight areas. But the housing problem was not only a legacy of the past, it was a reflection of present times with an expanding population and generally increased wealth.

He agreed with Mr. Ford that the present financial "pause" might mean that the housing figures would be down this year, but he thought that this would be a "temporary affair."

Turning to quality, the Earl said that the Federation had done much to improve the standards of construction in this country. Jerry-building, as known between the wars, was seen little of nowadays, thanks to the work of the Federation, but there was still a long way to go.

The choice of a house needed much knowledge and care, and, he said that he sometimes wondered if men were as selective about their houses as they were about their cars. A more informed and critical public opinion was needed. That the intending house purchaser could ask for the Registered House-BUILDER's certificate was a great step and he hoped that this scheme which now extended to 25 per cent. of new private housing would achieve 100 per cent.

The speaker then went on to criticise some points in present-day design. We needed a lot more thinking on house design in this country, he said, especially in the way of more space and more heating. Bedrooms were not used for study by children in the winter because they were too cold. The result was that all the family congregated in one room.

Much of present-day housing was below the standards we would like to see and did not compare in some respects with what other countries were doing, for example in the United States kitchens were so much better planned. Internally, British plumbing and bathrooms were not all they should be, and externally a lot could be done to improve the paraphernalia of plumbing which assaulted the eye.

All these suggestions would of course cost more money and cost was a prime consideration. But he thought that with better quality and better value for money people would be prepared to pay. What would be even more agreeable would be better quality without a rise in costs, and that equalled efficiency. Great years lay ahead for building, and he looked forward to rising standards of design and construction and falling prices.

#### The Land Problem

As stated the whole of the morning session of the Federation's conference was devoted to land, the subject being introduced by a Paper, "The Land Problem", presented by MR. WYNNDHAM THOMAS, director, Town and Country Planning Association. In the course of his Paper Mr. Thomas said:

One of the most widely believed bits of modern mythology is that Britain is desperately short of land. We have all the land we are likely to need, and for all the purposes for which we are likely to need it, for as far ahead as even the most far-sighted eye can see.

The urban area of England and Wales is likely to grow by about 700,000 acres (over 1,000 square miles) in the next 20 years. The average annual rate of increase is about 35,000 acres a year, with about half being used for housing. These figures of development demands sound very large. So they are; but in percentage terms the changes in land use are relatively modest. A 20-year decline of under 2 per cent. in the agricultural area should, on the record since the war, be accompanied by an increase of at least 20 per cent. in total agricultural production: a lot more food from a little less land. We are now producing over 60 per cent. more food than before the war. In fact, about two-thirds of the food we consume and which can be grown in our kind of climate is produced at home. This proportion can be expected to grow.

Although there is no absolute shortage of land, it is a prime function of planning to ensure that we use our land economically; and that all building on it is well grouped and seemly in appearance. The development which is most inefficient economically and destructive visually is a sporadic scatter.

Various estimates have been made of the housing programme needed over the next 20 years: by Mr. Graham Page, M.P., 500,000 a year; by the Alliance Building Society, 400,000 a year; by the chief planner of the Ministry of Housing and Local Government, Mr. J. R. James, a minimum of 250,000 a year. My own estimate, based on an assessment of real need, effective demand and construction possibilities is that 6,000,000 dwellings should—and probably will—be built by 1981: an average of 300,000 a year.

About 50 per cent. of the population of England and Wales now live in, or within the daily sphere of influence of, the five conurbations of Greater London, the West Midlands, Merseyside, S.E. Lancashire, and Tyneside. In most of these regions are great concentrations of slum and near-slum housing. In some of them, too, birthrate is high and new family formation rapid. By any analysis they represent together about 60 per cent. of the country's housing need: 3,600,000 dwellings out of the 6,000,000 which should be built.

Mr. J. R. James, chief planner in the Ministry of Housing and Local Government, recently gave estimates of the extent to which the housing needs of each of these regions can be met within the main urban mass surrounded by the Green Belt. Allowing for a modest reduction of densities in the redevelopment of their

grossly overcrowded slum and derelict inner areas, and quite substantial infilling and raising of densities in their outer areas, it is apparent that upwards of a half of the houses for each region will have to be built outside its Green Belt.

#### Densities

An anti-social alliance of market pressures, aesthetic prejudices and paternalist sentiment is now forcing higher densities, higher costs and lower standards in public and private housing, especially in the areas of greatest demand. The centres of large cities are becoming more and more the habitat of the rich, the poor and the childless.

Planning and financial policies in relation to housing must be directed towards enabling families of all sizes and incomes to live close to city centres. The right kinds of housing cannot be included at densities above about 70 persons per acre; nor can any housing at all be provided for middle-income families with children while central area employment levels rise, and with them land values over a widening area.

In circular 37/60 the Minister of Housing and Local Government called for more compact development. We have it on the authority of the Ministry's chief planner that the Minister was not urging higher densities in central redevelopment or infilling schemes by local authorities. What he principally had in mind was the need to avoid extravagant use of land by building fewer than six or even eight houses to the acre in outer areas of acute pressure. It is in such places that spectacular savings in land can be effected. In other words, it is some private housing which, in the Minister's view, tends to be wasteful of land.

Even so, a policy of forcing higher densities is almost certain to produce a strong reaction, even though it may be delayed. High density public housing schemes are monotonously single-class communities. Given higher incomes, the young and the ambitious will move out as soon as they can, leaving the poorer, the older and the least ambitious behind. In private housing, against as real incomes rise the need is for larger and better equipped dwellings: the 1,200 sq. ft. three-bedroom house should be the norm for the £1,000 a year family man; with a garage, of course, and a garden of not less than 1,250 sq. ft.—a modest little plot by any standards.

#### Planning Appeals

The volume of appeals seems to be directly related to the volume of applications for permission to develop. As the number of applications has increased from 250,000 to 500,000 a year since the middle 'fifties, so the number of appeals has risen from about 6,000 to 12,000 a year; one appeal for every 41 applications. Consistently, too, the Minister upholds about a third of each year's batch of appeals.

The average time for settling an appeal appears to be six to seven months, with some taking a lot longer. This delay is some indication of the tremendous work put on the Ministry, and the costly frustration some owners and developers may suffer. The one effective way of reducing the number of appeals is for the planning authority to allow each applicant the opportunity of discussing his case with the planning committee or the planning officer if refusal is contemplated.

#### Meeting the Demand

The critical question is—Where and how should the great pressures for development be met? As the political parties now recognise, this is perhaps the most urgent and challenging domestic problem of our time.

In answering the question "where?", we must first consider how much land is still undeveloped of that allocated for residential use in the 1951-71 development plans. In areas of acute pressure the answer is "precious little"—with emphasis on the "precious." In the London region, in the West Midlands, and around prosperous and attractive towns in the southern half of England especially, only one or two

years' supply remains; and little of that is on the market. The further out one goes the more there is left. In north-east Essex and south Cambridgeshire, for instance, there appears to be about 10 years' supply on present building rates. It is obvious, however, that very substantial new allocations are going to be made in the next year or so.

For the principal urban regions, the right policy is to guide the new growth to a large number of new towns and town expansion schemes. At the same time much more vigorous efforts are needed to hold down employment levels in overcrowded and overgrown cities, persuade industrial and commercial employers to move right out, and to stimulate new economic growth in those places in the older regions most likely to attract firms and people. The new town at Skelmersdale is a good example of this.

The Board of Trade, however, must really plan industrial location by wide regions in concert with the Ministry of Housing and Local Government. For far too long it has pursued a blinkered, short-sighted and narrowly conceived policy of steering firms to tightly defined development districts. This is not planning, nor does it deserve to be called policy. In fact, the Board of Trade long ago abdicated its responsibility to plan industrial location.

For south-east England, large new regional centres should be developed at places such as Ipswich, Norwich, Peterborough and Northampton. These are needed as counter-magnets to the pull of London. Much closer co-operation needs to be devised between public planning authorities and private enterprise in developing these places.

Consortiums of private developers should be encouraged to build largely private enterprise new towns or town expansion schemes. Within cities, local authorities must be enabled to acquire large sites for redevelopment—especially large areas of run-down housing—and lease parts to private builders. This procedure offers the best hope of getting a wide range of housing provided and at the same time the essential services renewed.

Mr. Thomas ended his Paper with a quotation from the film *On the Beach*. "There is still time brother, but not much."

#### Discussion

The first speaker following the presentation of the Paper was MR. PETER TRENCH, O.B.E., director, N.F.B.T.E., who challenged several points made by Mr. Thomas.

He said that we all had to be a bit psychic where the future was concerned, especially so on the land problem, but it was no myth that at present there was a shortage of land where people wanted to live. He accepted Mr. Thomas's forecasts for houses and land wanted in the future, but did not accept that these should be built at the present ratio of three local authority houses to five private.

But even on a three to five ratio, if more houses were to be built in urban renewal and new towns, private enterprise must be allowed into these schemes. Only 3,400 houses had been built by private developers in the new towns. It was true that the Minister had asked for the encouragement of private schemes in the new towns, but he wondered what would be the Development Corporations' reception to this idea.

Mr. Trench said that there had been much lip service on the question of private enterprise and the rebuilding of obsolescent areas, but in reality the great conurbations were not happy with private enterprise in their redevelopments. He called for politics to be dropped where urban renewal was concerned.

The private house-builder, he concluded, was thrown back on country and village development. Pressure must be brought to bear to ensure that land allocated for private houses was land available. Even the three to five ratio would be impossible unless there was a change of policy on new towns and urban renewal.

Land owners were heavily criticised by MR. I. W. OWEN (S.E. Lancs.), who de-

scribed them as "exploiters" and "anti-social." He said that what was needed in private house-building was a long-term policy and a short-term policy. The first was for talking about and planning the future, and the second was for doing something about it, especially to alleviate the suffering of the private builder.

MR. H. A. C. DOD (London) also stressed the importance of private enterprise building in the new towns, from which it had been virtually excluded. If we were to get 14 or 15 new towns over the next 20 years, then private developers must be allowed in.

MR. D. C. W. PIERCY, vice-president, thought that the Ministry should ask local authorities to "disgorge" their spare land if they had no plans to redevelop it within the next 12 months.

MR. ROBERT O. LLOYD, O.B.E., pointed out that private development was often restricted by the lack of amenities. Small authorities could not give their consent for some developments because there were no sewerage facilities, which were costly to provide. The provision of new sewerage schemes would therefore be a way to open up land and he recommended consultation between private house-builders and municipal officers.

Speaking again, Mr. Wyndham Thomas said that with reference to the three to five ratio, it could not be escaped that we would have to have a substantial local authority housing programme for many years to come. Private developers could not make much contribution to slum clearance, and the rehousing of people whose homes had been demolished to make way for new schools, etc., was another problem to be tackled by local authorities.

In answer to the question: Where was private enterprise to build?, he said that local authorities must be encouraged to purchase wide areas of land and make them available.

#### Next Five Years

In the afternoon session of the conference, a Paper, "Housing in the Next Five Years," was presented by Mr. Herbert Ashworth, LL.B., B.Sc.(Econ.). Extracts from this Paper will appear in next week's issue of *The Contract Journal*.

#### INSTITUTE OF QUANTITY SURVEYORS

##### Progress Reported by President

Speaking at the recently held annual general meeting of the Institute of Quantity Surveyors, MR. C. E. Smart, president, referred to the continued progress of the Institute and the increasing number of entries for its examinations. Some 42 technical colleges had courses of study for the Institute's examinations and it was pleasing to note that the Salisbury Polytechnic, Southern Rhodesia had recently inaugurated a course.

##### Elections

The following elections were made:

##### Vice-President

H. T. Burke, F.I.Q.S., M.R.S.H. (London); R. K. Crouch, F.I.Q.S. (Warwicks); E. G. Cornish, B.Sc.(Edin.), F.I.Q.S. (London); H. G. Douglas, F.I.Q.S. (Hampshire); W. J. Martin, F.I.Q.S., F.I.A.S., F.I.ArB. (Sussex); R. Beswick Shaw, F.I.Q.S. (Yorkshire).

##### Executive Members in Council

D. Bilham, F.I.Q.S.; J. Youdan Briggs, P.P.I.Q.S., F.I.A.S., F.V.I.; T. R. Carpenter, F.I.Q.S.; H. Fulford, P.P.I.Q.S., M.R.S.H.; J. Gregg, P.P.I.Q.S., F.I.O.B.; H. Vincent Mace, P.P.I.Q.S., A.I.O.B., F.V.I.; R. G. Paltridge, A.I.Q.S. (Cheshire); F. Smith, F.I.Q.S.; F. Biscoe-Taylor, P.P.I.Q.S., F.F.S.(Eng) (Quants); R. E. Biscoe-Taylor, F.I.Q.S., M.R.S.H.; W. R. Turner, B.Sc., F.I.Q.S., F.I.ArB.; R. D. Wood, F.I.Q.S., F.I.ArB., F.I.A.S.

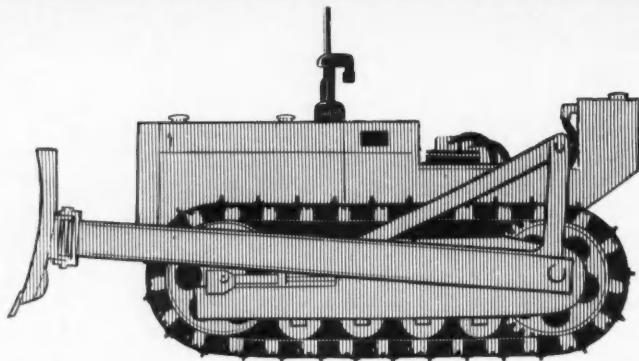
##### Area Members in Council

Area 1—E. E. G. Cummins, A.R.I.B.A., F.I.Q.S.; Area 2—T. G. Orange, F.I.Q.S.; Area 3—A. E. Bebbington, A.R.I.C.S., A.I.Q.S., M.R.S.H.; Area 4—D. A. George, A.I.Q.S., A.I.ArB.; Area 5—D. Ransome, F.I.Q.S., F.I.O.B.; Area 6—J. Fogg, F.I.Q.S.; Area 7—J. F. Hornsby, A.I.Q.S., M.R.S.H.

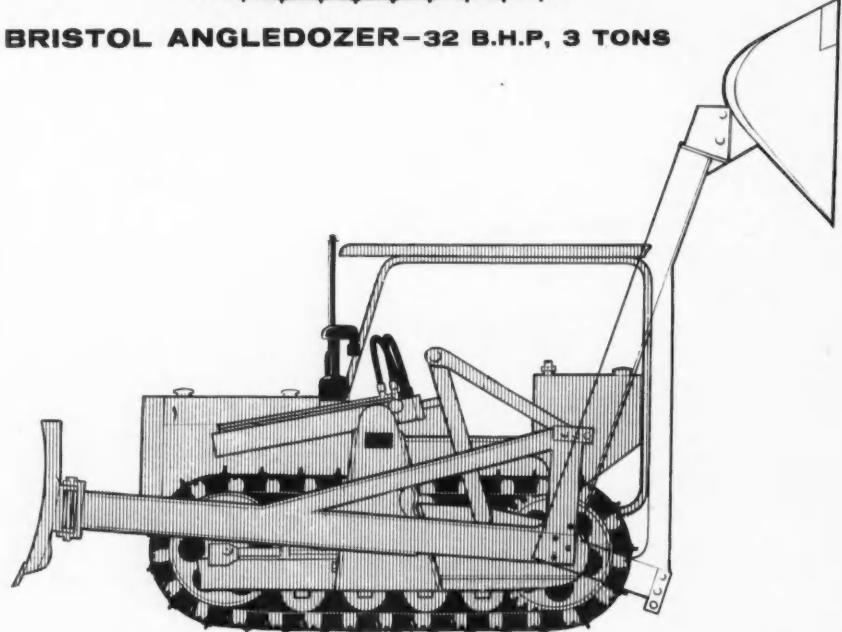


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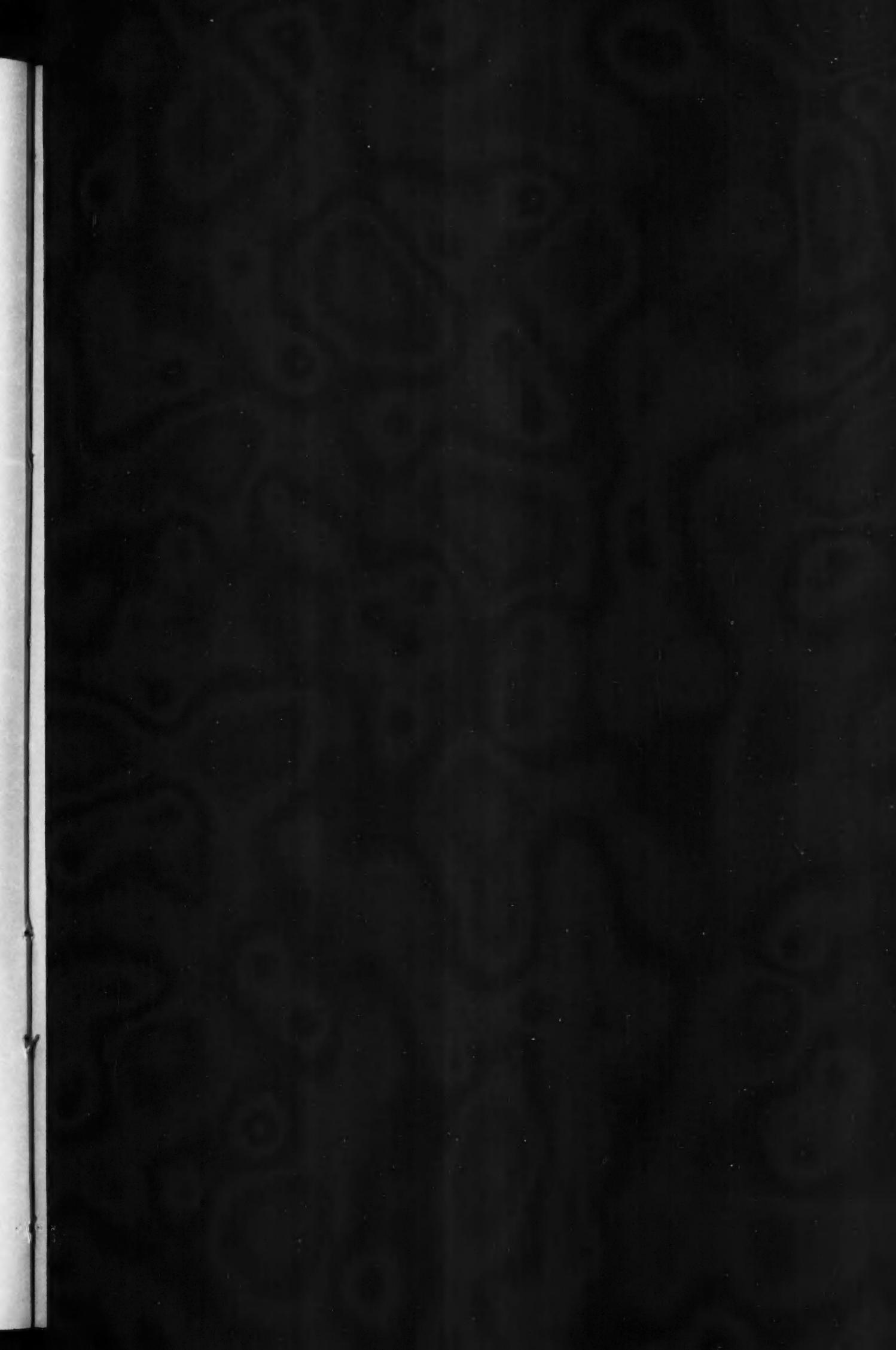


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## 1961 BUILDING EXHIBITION

### Next Week's Opening At Olympia

THE subject of technical information is to be the underlying theme of this year's Building Exhibition, which will be opened by Dr. Charles Hill, M.P., Minister of Housing, at Olympia next Wednesday. An important innovation will be the attention paid to development in theory and procedure, and a series of one-day conferences will be arranged as the Exhibition's contribution to educational progress within the industry.

#### Technical Information

Combined with the Exhibition's emphasis on the importance of good technical information, this year offers the first opportunity to introduce to the building industry the R.I.B.A.'s adoption of the SfB classification of building materials and services, as evidenced by their publication of the SfB filing manual.

**Technical Information, Its Design and Dissemination.** will be the title of a one-day conference to be held under the chairmanship of Mr. Leslie Wilson, director of ASLIB. The conference, which will be linked with a special display, will give an opportunity for discussion of the problems and difficulties, and for suggested solutions. It will take the form of three Papers covering preparation, distribution, handling and storage of technical information, and discussion on these will be led by a builder, a manufacturer, a sub-contractor, a merchant and an advertising agent. Following this will be the general discussion.

#### Working Drawings

Another important conference will be devoted to the subject of working drawings in the building industry. Organised by the R.I.B.A. in conjunction with the Exhibition, the conference will consider ways and means to improve these important documents, which can be difficult to store in a cramped site office, can be damaged by wind and rain, and can be bewildering to site foremen because of different office methods.

A panel of prominent architects, manufacturers and builders have drawn up a programme in which the purpose, structure, preparation and use of working drawings will be discussed with a view to subjecting these documents to modification or improvement which will benefit office and site efficiency.

#### Craftsmanship in Building

Entitled *Craft Training and Technical Skills in a Developing Economy*, this one-day conference will cover a subject of vital concern to all connected with building, and the discussion, which will be based on four Papers, will take into account all viewpoints, from design to demarcation, of the architect, contractor, manufacturer, and operative.

The four Papers to be read will be entitled as follows: "The Economics and Trends of Building Techniques and Production;" "The Changing Pattern of the Construction Industry in Europe;" "The Education and Training of the Craft-Technician;" and "Expanding and Accelerating the Craftmen's Range of Activities."

#### Design for the Disabled

In association with the National Fund for Research into Poliomyelitis, the Building Exhibition will be sponsoring a symposium on the design needs of the disabled. Some valuable research into the ways in which special house design can help a disabled person to live a normal life has already been carried out.

It is hoped that this conference will help in co-ordinating some of the results already achieved and in presenting further suggestions for improvement. The chairman of the conference will be Sir Walter Puckey, and expert speakers in various fields—among them Dr. Frank Cooksey,

Norman Capener, Miss Felicity Lane Fox, Miss Barbara Naish, A. G. Sheppard Fidler, Dr. J. B. Stewart, Mrs. Claire Rayner, W. F. Floyd, Howard V. Lobb—will deal with problems of designing for the disabled and discuss suggested solutions. At the end of the conference the speakers will assemble on the platform and answer questions put to them by the audience.

#### Programme of Conferences

The conferences form part of the effort made by the organisers of the Exhibition to maintain its function as a focal point for progress and influence within the industry. Application forms for tickets may be obtained from the Conference Secretary, 11 Manchester Square, London, W.1. Details of date, time and location are as follows:

*Craft Training and Technical Skills in a Developing Economy.* November 18, 10.15 a.m.-4.45 p.m. Conference Hall.

*Technical Information, Its Design and Dissemination.* November 20, 10.25 a.m.-4.30 p.m. Conference Hall.

*Architectural Design for the Disabled.* November 23, 10.30 a.m.-4 p.m.

*Working Drawings in the Building Industry.* November 24, 10.15 a.m.-5.00 p.m. Conference Hall.

Two other conferences have been arranged by the London Building Pro-

tices' Craft Competitions, in which some 780 apprentices from all parts of England and Wales are taking part, will be staged in the second floor gallery of the Empire Hall, and will be in progress throughout the duration of the exhibition.

The competitions are sponsored by the National Joint Council for the Building Industry and have been arranged in collaboration with the City and Guilds of London Institute and the various craft guilds and societies.

#### L.C.C. Sculptures Exhibition

The exhibition of photographs and models of works of art, etc., acquired by the London County Council under its patronage of arts scheme, which was shown at the Royal Festival Hall last month, will be remounted at Olympia during the period of the Building Exhibition.

#### Club Amenities

The interior of a large room at Olympia has been designed by Roger Worboys, M.A., A.R.I.B.A., to serve as the Royal Institute of British Architects' Club Room.

A complete framework of scaffolding was built up the walls and under the ceiling and a new suspended ceiling of acoustic tiles 16in. square was fitted. Slung under this are boxes of Canadian ply in which fluorescent tubes are fitted to illuminate the ceiling. Round the walls, moulded Canadian ply in various textures alternates with large plastic panels and glass fibre curtains. A mosaic panel by Elder Reed has been placed in front of the tea counter and decorative stoneware panels add colour to the back walls and have been used to face structural columns.

Another club room will be provided at the Exhibition by the London Master Builders' Association, to serve as a meeting place for all members of the L.M.B.A. and N.F.B.T.E. and their friends visiting Olympia. The club room, where light refreshments will be available, will be in the Empire Lounge, and membership tickets may be obtained direct from the Secretary, L.M.B.A., 47 Bedford Square, London, W.C.1, or at the National Federation Stand.



ductivity Committee and the Ministry of Works. Details are given below.

*Cranes for the Smaller Contract.* This has been organised by the London Building Productivity Committee and will take place on November 21 from 3.30 p.m. to about 6.30 p.m. Chairman for the symposium will be Mr. N. Stanley Farrow and Papers on the subject will be presented by Mr. R. C. Chevassut, of Ruston-Bucyrus, and Mr. H. G. Vallings, of the Building Research Station. Following this, Mr. T. Sutcliffe, of Ableson and Co., Ltd., and Mr. R. E. Carter, of R. G. Carter, Ltd., will join the previous speakers to form a panel to answer questions during open discussion.

*Design for Mechanisation.* This has been organised by the Ministry of Works and will take place on November 28 from 5 p.m. to 7.45 p.m. The chairman will be Sir Thomas F. Bennett and the speakers will be G. Grenfell Baines, E. J. Cook, Bruce Martin and O. J. Masterman. This conference will take up some of the points which evoked interest at the recent congress of the International Union of Architects in London, and the influence of modern techniques on architecture will be discussed under such subject headings as: Is the increasing use of mechanisation reducing the cost of buildings? Are the present-day machines capable of speeding the erection and completion of buildings incorporating the newer materials and techniques available today? Should the design of buildings be tailored to suit mechanical production?

The fourth series of Building Appren-

#### "MINISTRY OF DEVELOPMENT" PROPOSAL

The establishment of a Ministry of Development and Land was suggested by Mr. Peter Self, chairman of the executive of the Town and Country Planning Association, at the recent annual conference of the association in London.

The new Ministry, he said, would do three things. First, it would co-ordinate Government plans for the development and use of land bringing together transport and communications, industrial location, housing, the conservation of natural resources and the preservation of rural areas and national parks.

Secondly, it would give closer guidance and help to local authorities through the medium of regional plans, and thirdly, the Ministry would examine public investment and public subsidies to make sure that these accorded with its general policy for the distribution of population and employment.

"There is a growing feeling," said Mr. Self, "that Government measures which bear on physical development and the use of land are not properly integrated."

"We have come to accept some degree of economic planning as part of our ordinary machinery of government, but we have not really done the same thing for physical or land use planning. I cannot see that we shall attain this goal until some central Ministry is made responsible for physical planning, in the same way as the Treasury is now responsible for economic planning."

## TRAINING THE BUILDING LABOUR FORCE

### Eastern Federation's Technical Education Conference

THE third technical education conference arranged by the Eastern Federation of Building Trades Employers was held at Cambridge recently. Those present included principals and heads of building departments representing the 22 technical colleges in the region and 35 representatives from the Federation and local associations. Guests included Mr. J. R. Newman Booth, H.M.I., Mr. F. S. Butler, assistant regional director, Ministry of Works, and Mr. G. K. Pollard, secretary, Industrial Training Council Regional Committee.

The conference had before them a statement showing current apprenticeship figures throughout the region. There was evidence of a steady increase in the number of apprentices entering the industry and, although the figures were still below target, the improvement had become marked over the past two years. There was, however, a serious shortage in most areas of recruits for the trowel trades. Although in some areas the standard was felt to be still on the low side, the general consensus of opinion was that the standard of apprentice now entering the industry was considerably higher than five years ago. This improvement could be maintained if employers would be more discriminating in selecting their apprentices.

#### Pre-Apprenticeship Courses

The conference noted that there were at present 10 pre-apprenticeship courses running in the region with approximately 100 students. The Federation attached considerable importance to these courses, satisfactory attendance at which merited a year's reduction in the apprenticeship period.

Experience on these courses varied considerably in different parts of the region. Whilst some colleges had more applicants than could be accommodated, in other instances where arrangements had been made between the local joint apprenticeship committee and the education authority for a course to be instituted, insufficient recruits had come forward in spite of guarantees of apprenticeships on completion. This was attributed to a number of factors, viz., the wish of parents to have their boys earning as soon as possible; the attitude of headmasters of some secondary modern schools; and the fact that in some areas, building did not appear to school-leavers to offer as attractive an opportunity for employment as, say, engineering.

The view was forcibly expressed by both representatives of technical colleges and the industry that the proper place for pre-apprenticeship courses was the technical college and not the secondary modern school where it was felt there was neither the staff, equipment nor the right atmosphere.

It was explained that great care should be taken in selecting boys for the course, possibly in consultation with the youth employment officer. It was suggested that some of the difficulties in the way of recruitment might be overcome if the industry would accept some form of sponsorship, possibly with payment being made during attendance. Care should also be taken by employers to see that apprentices received reasonable treatment when they finally entered the industry as it was the experience of some colleges that boys leaving the course found themselves under the instruction of craftsmen of indifferent ability which could have the most unfortunate effect.

#### Norwich Induction Course

At the invitation of Mr. C. E. Wadley, the president of the E.F.B.T.E., Mr. T. V. Douglas, head of the building department

of Norwich City College, gave a brief report on the progress of the four-week full-time induction course being run at the college each September for new apprentices in each of the crafts, except painting. Mr. Douglas said that it had been felt that there was a need to do something to close the gap caused through the closing down of the junior technical school and it was through this that the idea of the induction course had been conceived. The proposal had been discussed with the local builders who, although a little sceptical at first, had agreed to allow their first year apprentices to attend the college (with full pay) for a period of one month. So far as the college was concerned, it entailed placing the whole of the resources of the craft side at the disposal of the four-week course. This meant that apprentices attending day release from second year onwards, commenced their studies a month later. The recent course with its emphasis on trade training had been attended by 100 apprentices in all crafts, except painting, from 24 different firms. Among the benefits which were derived from the induction course was a clear indication during the four weeks of the suitability of boys for their particular crafts. Mr. Douglas said that the progress which the apprentices made in their practical work during this comparatively short period was quite remarkable. Builders who had taken the opportunity of visiting the college while the course had been in progress had been most impressed with the enthusiasm with which the boys went about their work. The employer received a written report on each boy's work and progress at the end of the course.

Builders from the area served by the Norwich College who had boys attending the course spoke with enthusiasm of the results which it had achieved in introducing the boys to building and to the concept of technical training. Many questions were asked and answered in the ensuing discussion.

#### Ipswich Block Release Course

The Conference considered a comprehensive report on the experimental block release course which had been inaugurated at the Ipswich Civic College in September, 1960.

Commenting on the report the Principal of the College, Mr. F. Metcalfe, reminded the conference that the experiment had been initiated as a result of the discussion at the last education conference organised by the Federation in 1959. After paying tribute to the support he had received from the local building industry and, in particular, Mr. C. W. Cubitt, he said that although the experiment had only been running for one year, it was possible to give some assessment of the results. In the first year there had been 20 blocks of eight weeks each providing for over 200 apprentices in the crafts of bricklayer, plumber, carpenter and painter. During the 1961/62 year this would be expanded to 24 blocks. There had been a spectacular advance in the quality of practical work carried out, as it was possible on the block release system to organise long periods of practical instruction. Reports from the teachers indicated that not only had the quantity and quality of the work increased, but the interest of the boys had been much more easily maintained. The value of tutorial work had been apparent. The course had also included a measure of liberal studies, the importance of which could not be overlooked. The dress and behaviour of the boys had shown a marked improvement and he considered that the experiment had also been a considerable success as a social and educational influence.

Mr. Metcalfe went on to say that the length of the block (eight weeks) was

somewhat controversial. The requirement to attend evening classes during the period of the block release was regarded unfavourably by the students. He himself felt that it gave the students far too long a day of study and he would prefer to eliminate evening attendances during the period of block release which might be increased to 10 to 12 weeks per year, possibly by means of two separate six-week periods. A slight difficulty which had occurred and which might prove a source of trouble on future courses was the fact that the students suffered a certain loss of earnings, i.e. loss of overtime and bonus. This was a point which builders might care to examine. Attendances had improved and homework was a good deal better and, although it might be dangerous to draw conclusions from a single year's experiment, there were signs that examination results were marginally better. Payment of lodging allowances had been fully investigated and it was understood that the Ministry of Education now regarded favourably the question of some financial contribution to the cost of apprentices' lodgings during the course. The subject was now being discussed with the Treasury. Mr. Metcalfe said that at the present time all the boys attending the block release course were travelling to and from their homes daily.

Representatives of the building industry in Ipswich spoke enthusiastically of the course which they maintained caused a good deal less interruption and inconvenience in work organisation than the normal breaks of day release. Although there had been some misgivings, particularly among the smaller firms in the early days, the system was now accepted by the vast majority of the builders in the area.

In the discussion which ensued several representatives of the industry expressed their preference for the continuation of the present system of day release as they felt that block release would tend to penalise the firms who endeavoured to train a fair number of apprentices and who were likely to lose the services of a fair proportion of their labour force for a period of up to eight weeks at a time.

Reference was made to the continental system of technical education and the possible effect on technical education in this country of Britain's entry into the Common Market.

On behalf of the Federation the Director said that the experiment had been closely followed with special interest. Progress in the region would, however, have to be made carefully. To ensure success, the builders in each locality would have to be convinced of the superiority of block release over the present day release system before colleges contemplated introducing this new method of instruction. There were many factors to be assessed and it was necessary to bear in mind the extent of the existing educational requirements of the apprenticeship scheme.

#### Higher Education

It was agreed that at the next conference the opportunity should be given to discuss education for management students studying for Higher and Ordinary National Certificates and for the Institute of Builders examinations.

#### BIDS FOR NEW ZEALAND UNIVERSITY EXTENSIONS

The New Zealand Government have approved the invitation of tenders for the first stage of new science buildings for the University of Canterbury.

This stage comprises an eight-storey block for physics and chemistry, mathematics, psychology and philosophy, a two-storey block providing central lecture theatres and a two-storey block for library and administrative facilities. Stage two will include a three-storey and a six-storey block.

The buildings have been designed by the Government architect, and are expected to be completed within four years of work starting.

## GLASS CURTAIN WALLING FOR ST. HELENS CROWN OFFICES

**A**PPROPRIATE to St. Helens, glass has been used as the external facing and decorative material on a new Crown office building which has been built in the town to accommodate the local offices of the Ministry of Labour and the Board of Inland Revenue.

The building has frontages to College Street and Crab Street and is the first new building in the vicinity. It has been set to building lines laid down by the borough council, which will be followed in the general redevelopment of the area.

The College Street wing is a three-storey block with basement, and the Crab Street wing is single-storey with a car park behind. The structure is of reinforced concrete throughout with floors of flat slab design. The single-storey wing is free of internal columns as it is used for Ministry of Labour public offices; the clear span was achieved by using precast prestressed units.

Structure and services are designed to allow for future extension, and it is envisaged that the extension will project as a wing at the rear of the building and over part of the existing service yard.

The elevational treatment was carried out in curtain walling with infilling of coloured glass panels of various types which are now available, that is, decorative glass which has insulation qualities, toughened decorative glass and, where translucent glass was necessary, armoured, polished plate, wired, and sheet glass are in use. Ravenhead multi-coloured rustic facing bricks were used for end walls.

A heating load of approximately

700,000 B.Th.U. per hour is supplied by a sectional boiler, oil fired. Lighting is primarily by tungsten filament lamps, and clocks are of the electric synchronous type. Fire protection, in addition to that inherent in the building structure, comprises foam inlets to boiler room and oil store, and first aid appliances of the water, foam

and sand types distributed strategically throughout the building.

The estimated cost of the building is £87,000 and the gross floor area 27,000 sq. ft. The building was designed in the Chief Architect's Division, Ministry of Works: Senior architect—E. H. Banks, F.R.I.B.A., F.R.S.A.; architect—R. Stevenson, A.R.I.B.A.; senior structural engineer—R. J. R. Hancock, M.B.E., A.M.I.C.E., A.M.I.Mech.E.; senior mechanical engineer—J. J. Taylor, A.M.I.C.E.

A. McColl and Son (Builders), Ltd., St. Helens, were the main contractors.



St. Helens Crown office building

## "FLYING WING" FEATURE OF NEWCASTLE COLLEGE SCHEME

**U**NUSUAL feature of a £600,000 scheme for the erection of a new refectory and students' union extension at King's College, Newcastle upon Tyne, is a 170ft. long "flying wing".

This will be a reinforced concrete structure, poised on four great concrete columns, spaced 26ft. 6in. apart and 99ft. lengthways, which support a main beam of post-tensioned concrete running midway along the wing, linked by precast concrete columns to subsidiary beams supporting the lower floor and roof.

In effect the lower floor will be suspended from the main midway beam. Each end of the bridge-like structure will be cantilevered out 35ft. The wing will accommodate offices and committee rooms for the students' union.

As reported in last week's issue of *The Contract Journal*, John Laing Construction, Ltd., recently began work on the project, which is due for completion in the autumn of 1963. The architects are Raglan Squire and Partners and William Whitfield, 3 Hobart Place, London, S.W.1.

Designed to cater for a student body

which is expected to reach 5,000 within the next few years, the reinforced concrete refectory building incorporates on four levels a large air-conditioned kitchen with extensive storage facilities, a self-service refectory for 850, waitress-served refectory seating 300, and a top floor ballroom.

With the exception of a small service tower which is to be brick-built to match the existing building, external treatment will consist largely of exposed aggregate concrete, relief being provided in some areas by the use of natural materials. Cladding materials were chosen for self-cleansing properties and to give emphasis to the new group of buildings in contrast to the traditional brick of the college.

## £196,000 ADDITIONS TO KILBRIDE SHOPPING CENTRE

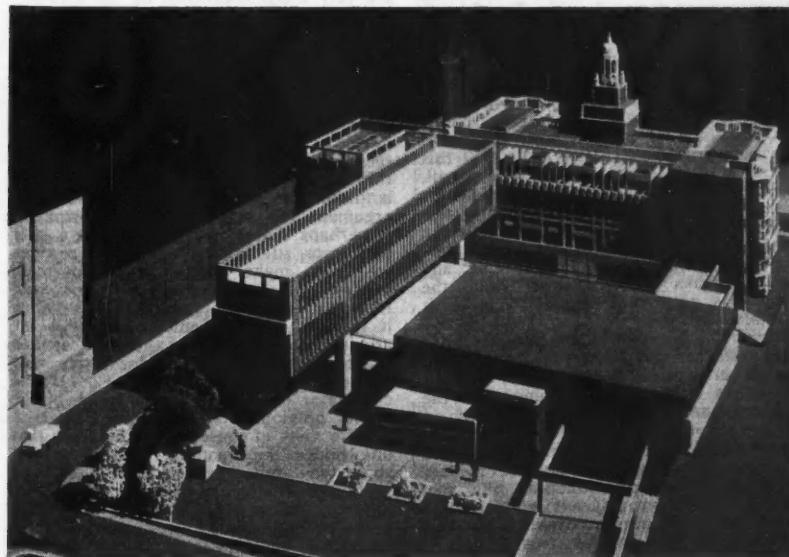
A large addition to the shopping centre at East Kilbride is to be built by Holland & Hannen and Cubitts (Scotland), Ltd., at a cost of £196,000.

Work on the block, which includes a departmental store, two supermarkets, banks, showrooms and shops is to begin early next month and is expected to be completed in the autumn of 1962. Ravenseft Properties, Ltd., are the promoters.

Framed in reinforced concrete, the building will be carried on reinforced concrete bored piles and pile caps with solid reinforced concrete floor and roof slabs.

The external walls are generally of cavity construction, the inner skin being of lightweight blocks. The main elevations are clad in aluminium curtain walling, and Portland stone walling and dressings. Internal walls will be of lightweight partition blocks and the roof will be asphalt covered.

Fewster and Partners, 22 Conduit Street, London, W.1, are the architects, and W. V. Zinn and Associates, Collingham House, Eagle Street, London, W.C.1, the consulting engineers. The quantity surveyors are Cyril Sweett and Partners, 48 Bedford Row, London, W.C.1.



Model of new refectory and students' union extension at King's College

## A LAWYER CONSIDERS . . .

### Powers of Restrictive Practices Court— Over-payment of Sub-contractor

THE general effect of the Restrictive Trade Practices Act, 1956, is becoming widely known through the very clear and careful judgments which the Restrictive Practices Court has given. Until these judgments started to appear some two or three years ago industry was not generally aware of what exactly the Act did or could do to agreements among firms or companies engaged in a particular industry.

It is clear now that agreements between firms or companies in any industry which attempt to control the price or the terms on which the public get the products of that industry stand no chance of being allowed to continue unless it can be proved that a really substantial benefit to the general public results from that system of control and the abolition of the control system would be detrimental to the interests of the public. As this has become clear hundreds of agreements in industry have been cancelled, without any attempt to fight the cancellation by going to the Restrictive Practices Court. Of those cases where presumably it was thought worthwhile to make a fight of it and in which the Court has given judgment, only three or four have succeeded in preserving their agreements. The most notable were the cement industry case, discussed in an article in *The Contract Journal* for June 22, 1961, and the black nut and bolt industry case, where pricing agreements were upheld; these cases, where the industries concerned were found to be most efficient and the agreements greatly benefited the public by giving them a very low price and/or exceptionally good service, will no doubt remain exceptional.

#### Similar Agreements

It may occur to some industries whose agreements have been abandoned or declared void by the Court that they might try to reintroduce some similar agreement and try to make it outside the terms of the Act. This question has recently come up before the Court who have, as usual, taken great pains to make the position clear so that industry may know where it stands.

Under the Act every agreement in industry controlling the terms, etc., on which the public get goods or materials, including building work, must be registered with the Registrar of Restrictive Trading Agreements. The Registrar then has power to refer agreements to the Court who must declare them void unless the defences set out in the Act are proved. Once a reference has been made most industries have thought the matter over and decided to abandon the agreement; what is called a consent order of the Court is then made declaring the agreement void. Some industries have tried to establish a defence but most have failed. The position therefore is that agreements have either been abandoned or declared void by the Court after the Registrar has decided to refer them to the Court. If in either of these circumstances the Registrar thinks that the industry concerned has not really abandoned the agreement or is not regarding it as void despite the Court's declaration, he can go to the Court and the Court may issue an injunction. This is a powerful weapon and under the Act the injunction may not only forbid each and every party to the void agreement from giving any effect to it but may also ban the making of any other agreement, whether with the same parties or not, which is "to the like effect."

If an industry whose agreements have been abandoned or declared void wants to make some further agreement then it can only do so if that further agreement is not "to the like effect" as the void agreement. What does "to the like effect"

mean? Where the Court has heard a case and given its usual long and carefully reasoned judgment the industry concerned in that case will know what the Court thinks of its agreement and what were the salient features of it which were most objectionable under the terms of the Act. It should not be difficult in those circumstances for responsible people in an industry whose case has gone to Court to know whether or not any further agreement is "to the like effect"; they and their advisers have only got to think whether the Court's reasoning in the case declaring the original agreement void would equally apply to the new agreement and thus make that void. If, however, an agreement has only been abandoned and a consent order declaring it void has been given it will not be so easy to decide whether or not any later agreement is "to the like effect". No doubt good sense will prevail but if it should not and an industry attempts to work some new agreement that is "to the like effect" as one declared void then it is as well to bear in mind a recent case concerning the newspaper distribution industry.

In that case the Retail Newsagents' Federation's agreement with the London daily newspaper proprietors' association whereby new retailers had to apply for entry into the trade, thus restricting the entry of competitors, was declared void as being contrary to the public interest. Effect was given to this declaration by the issue of an injunction restraining each and all members of the Federation from giving effect to or enforcing the void agreement and also from making any other agreement "to the like effect". The Federation, however, saw fit to notify the Registrar of Restrictive Trading Agreements that they were intending to set up a scheme for establishing a list of selling points of the national daily newspapers. In the covering letter to its district secretaries informing them of this list the Federation stated that the letter was not to be taken as containing any recommendation, express or implied, as to action to be taken or not to be taken by any member. The scheme was itself described as one "to replace an agreement which (we are assuming) will be declared void by the Restrictive Practices Court."

When this action was brought to the Court's attention the Court did not favour this action of the Federation which it quite clearly regarded as "to the like effect" as the agreement declared void. The Court's very strong comments are worth quoting: "It is obvious that the purpose of the list of selling points is not to frame it and hang it up in the offices of the Federation and that this is intended to be a preparatory step to seeking to enforce restrictions on the entry of persons into the retail newsagency trade. . . . It is plain that this list, if it is to serve any purpose at all, is designed to form part of a scheme for carrying on a course of conduct which this court has declared to be contrary to the public interest. If, in the course of carrying out further steps in the scheme, any person breaks the injunction which the court has granted, I desire to make it crystal clear that the court will take a very serious view of that conduct; and I also desire to make it crystal clear, since the object is plain, that the court will not regard as a mitigating circumstance the fact that any such person has acted on the advice of lawyers, solicitors or counsel, and that, if the advice which they have received is wrong and they are in fact in breach of the injunction, the fact that they were wrongly advised that their attempt to evade the provisions of the Act was lawful will not be regarded as a mitigating circumstance or any reason for not applying the full penalties of the law

on persons who commit contempt of court." Such penalties of course include imprisonment.

From this quotation it will be seen that industry, including the construction industries, must always bear in mind the powerful provisions of the 1956 Act before coming to any agreements within their industry. If not the recent startling imprisonments in the U.S.A. of eminent business men may well be repeated here.

#### Over-payment of Sub-contractor

AN interesting point arose in a case which came to the writer's attention. Under a contract on R.I.B.A. terms with a local authority the main contractor was told to enter into sub-contracts with sub-contractors nominated by the authority's architect. In one certificate an amount was included as a final payment to the electrical sub-contractor. Later it was found that the architect had over-certified for this sub-contractor. The architect then proceeded to deduct the amount over-certified, almost £300, from an amount due to another nominated sub-contractor; the contractor being left of course to pay the proper sum due to this sub-contractor and recoup his loss by attempting to recover the amount over-paid to the electrical sub-contractors. In other words the contractor was suffering for the architect's mistake.

One would hope that errors like this which are bound to occur from time to time would be sorted out by the architect approaching the over-paid sub-contractor and asking him to rectify the position. But assuming that this commonsense approach does not work, can the architect's action in this case be justified under the contract?

If one looks at Clause 21(b) it says that "The sums directed to be paid to nominated sub-contractors for work, materials or goods comprised in the sub-contract shall be paid by the Contractor with 14 days etc." There is nothing here which would seem to entitle the Contractor to query the architect's direction or to hold up payment to the sub-contractor; indeed by sub-clause (c) if he failed to pay over in the time stated the architect could exercise his right to pay direct. It is surely this very strange position under which a nominated sub-contractor's legal relations are with the contractor but the latter's powers vis-à-vis his sub-contractor are very much controlled by the architect that provides the strongest argument against the action of the architect given above. If the contractor has no legal right to refuse to pay over a sum certified can one argue that, when that sum turns out to be a wrong payment, the contractor must be left solely to what rights he may have under the sub-contract for the recovery of that wrong payment? While this may be a strong moral argument it is unfortunately difficult to find legal arguments to support it. The strongest is perhaps that if the architect in a later certificate deliberately under-certifies so as to make good the over-payment ordered then that certificate does not represent the value of the work for which it is certifying payment; against this the architect could reply that the total certified in certificates to date does represent the current value of the works—if the contractor has paid over too much of the money previously certified that is too bad. It is in view of these legal difficulties that one hopes the common sense approach suggested above as an answer to this problem will prevail; the only satisfactory alternatives are to re-draft the main contract to cover this kind of situation or to make sure that the sub-contract provides that even a final payment under the sub-contract can be reviewed.

*Institution of Civil Engineers*

## SUBSTANTIAL FUNDS NEEDED FOR CIVIL ENGINEERING RESEARCH

### Sir George McNaughton's Presidential Address

**SIR GEORGE MCNAUGHTON**, in his presidential address to the Institution of Civil Engineers in London on Tuesday evening said the recently formed Civil Engineering Research Council had an income of about £40,000 per annum for the next few years, but that research was costly and a much larger sum was required if the organisation was to do all that was expected of it.

He amplified this by pointing out that the Water Research Association (allied to the British Waterworks Association) had an annual income of about £80,000, and the Water Pollution Research Board of the D.S.I.R. spent approximately £120,000 per annum. He then reminded members that Sir Herbert Manzoni, whom he succeeded as president, had put the target figure for research at £250,000 per annum if the Research Council was to cater for the whole field of civil engineering.

"In the past, civil engineering has suffered through there being no central organisation charged with the duty of initiating and co-ordinating research," he said. An enormous amount of valuable work had already been done by various universities, Government research organisations, contractors and private industry. But there was still a very wide field of basic and applied research open to an organisation commanding the substantial funds



SIR G. MCNAUGHTON

which were necessary if the best brains were to be attracted to and retained on this work, and if the right laboratories and equipment were to be provided.

#### Amalgamation

On the question of the desirability of amalgamation or affiliation between the various chartered bodies of engineers, Sir George said: "A new school of thought is gaining a substantial degree of acceptance. It is that the Civil, the Mechanical, and the Electrical Institutions should, if they agree, combine to form one Institution of Chartered Engineers, which would be so powerful that the other chartered bodies could not afford to stand outside."

He went on to say: "Others, whilst accepting the ideal of one all-purpose Institution, hold that the time is not yet ripe for such a bold and far-reaching step, and they propound an over-riding high-level co-ordinating board which would speak for the three Institutions on all matters of public interest and policy and to achieve appropriate amalgamations and affiliations as may be desirable in their respective spheres.

"It is thought," he said, "there is a substantial body of opinion in the three Councils in favour of this suggestion. I am in favour of it, not as a final solution, but as a means of bringing the Institutions closer together in the hope that it will be possible to unite the three Institutions into one body in the future."

#### Reducing Water Undertakings

Sir George said that a few years ago there were 1,100 water supply undertakings in England and Wales, but the number had now been reduced to about 700, and many more groupings were under consideration. "It has never been publicly stated what the ultimate numbers might be. In my view, some 250 to 300 might be looked on as the ideal, but it is likely that any

reduction below about 450 will be difficult to achieve within a foreseeable time."

Referring to a memorandum prepared by the Ministry of Housing and Local Government in April this year, the president said it stated that new and far-reaching legislation was proposed in regard to the whole water economy, and it was contemplated that a Bill would shortly be put before Parliament under which Water Conservation Authorities would be established to control the economy of each river basin or groups of basins.

He said that the proposals were still in an early stage, but it was understood that the Minister had opened confidential discussion with the representatives of affected interests, both public and private. If, in the end, he promoted the Bill with proposals in accordance with the memorandum, the Water Conservation Authorities would, in brief, become responsible for:

1. The keeping of an up-to-date hydrological survey for each area, including the assessment of water resources and potentialities (both surface and underground).
2. The preparation of an overall plan for the development of resources.
3. The control and development of resources, including the construction and operations of regulating works.
4. The allocation of water between the various users by a licensing system.
5. In suitable circumstances, the recharge of underground aquifers.
6. Reviewing and varying the discharge of compensation water.
7. Where appropriate, the transfer of water between water conservation areas.
8. The control of pollution both of surface and underground water.
9. Land drainage and flood prevention.
10. Certain navigation questions.
11. The administration of fishing legislation.

## BELFAST AIR TERMINAL

### Tenders Being Obtained for Main Contract

**TENDERS** are being invited for the main construction contract for Belfast's new civil air terminal, to be built at Aldergrove. All contract arrangements, together with the supervision of construction, will be carried out by the Air Ministry on behalf of the Ministry of Aviation. It is expected that the terminal building and apron, estimated to cost £720,000, will be open by the summer of 1963.

Both the terminal building and the apron have been designed so as to be readily capable of expansion. Basically the building will consist of three component parts: the main passenger and baggage handling block, a pier extending into the apron, containing gates to serve six aircraft stands, and a wing containing administrative and operational offices, together with an additional arrival and departure gate to serve two aircraft stands.

#### Main Block Design

The main block is simple in design, and will be clad principally with glass and solid grey brick panels. Its main feature is the treatment of the roof, which will be an independent structure, comprised of a series of trusses, each truss being sup-

ported on steel stanchions. This will give an undulating effect which will be carried over the whole building. The undersides of the steel trusses will be covered with natural timber slating. Internally all concrete surfaces will have a natural finish, with floors laid with hard-wearing decorative tiles. The offices, shops, snack bar, licensed bar and pier will be of aluminium frame and timber construction.

#### Engineering Services

A main boiler house with three oil-fired low pressure hot water boilers will supply heating and hot water, with automatic temperature control throughout. Electricity will be supplied through the terminal's own sub-station, the total connected load being 480-kW.

Car parking facilities will be provided by the landscaping of ground near the terminal building.

Designed by the Ministry of Aviation, the apron will provide accommodation for 10 aircraft of various types. In addition B.E.A. are to build a freight shed and accommodation for their aircraft catering and vehicle servicing requirements.

The architects for the scheme are W. H. McAlister and Partners, 6 Donegall Road,

Shaftesbury Square, Belfast, 12, with Yorke, Rosenberg and Mardall, London, acting as planning consultants. Clarke, Nicholls and Marcel, 21 Westbourne Grove, London, W.2, are the civil engineering and structural consultants, and W. H. Stevens and Sons, Belfast, the quantity surveyors.

## NEW DREDGING VESSELS FOR THE HUMBER

The British Transport Docks are to provide four new dredging vessels for their Humber fleet which operates at the ports of Hull, Grimsby and Immingham. Heavy and regular dredging is required at all these ports to maintain the depth of water in the approach channels, entrances, and docks, where the amount of mud removed annually is about seven million tons.

The total cost of the four vessels will be over £1m. They will be diesel-powered and will consist of a suction dredger, a triple-grab dredger and two single-grab dredgers. These will take the place of eight steam vessels.

Both the suction dredger and the triple-grab dredger will be more than 200ft. in length and each will be the second modern vessel of its class and size in service in the Humber.

The new ships will bring to 13 the number of vessels added to the Humber dredging fleet since 1953.

### CUBITTS AWARDED £1M. HARLOW CONTRACT

A NEW office block, bonded warehouse and gin distillery are to be built for W. and A. Gilbey, Ltd., at Harlow, Essex. As reported exclusively in *The Contract Journal* last week, the contractors are Holland & Hannen and Cubitts (Great Britain), Ltd., 1 Queen Anne's Gate, London, S.W.1.

The office block will have three storeys and a directors' penthouse suite. The L-shaped main block will be 68ft. high, 170ft. long, and 54ft. wide. The long arm of the "L", which adjoins the warehouse, will be 200ft. long and 33ft. wide.

The warehouse will be 540ft. long, 300ft. wide, and 36ft. high. All doors are steel, or covered with steel sheeting and the main doors will be electrically operated from inside the building.

One of the most interesting features of the scheme is the 40ft. high "wall" which will form the north side of the distillery. This will enable people passing on the main road to see the three 30ft. high copper stills and part of the compounding room below.

#### Construction

Constructed with a reinforced concrete frame, the office block will incorporate precast concrete panels for the walls. The ground floor wall will be faced with napped flints, and the panels between the windows will be of Welsh slate.

Pile foundations support the warehouse steel columns, and these in turn carry a series of welded steel girders framing a flat roof. External walls will be faced with brick or concrete panels and the interior will be lined with an insulating concrete block, aluminium foil, timber battens and an insulating sheet material.

A continuous 9in. brick wall rendered on both sides will separate the bond from the duty-paid warehouse.

Architects for the scheme are Peter Falconer and Partners, Imperial House, Stroud, Gloucestershire, in association with Alexander Gibson, Design Research Unit, 37 Duke Street, London, W.1.

The consulting engineers are Clarke, Nicholls and Marcel, St. Johns Lodge, Tivoli, Cheltenham, and the quantity surveyors are Venning, Hope and Partners, Castle Lodge, Taunton.

### 1,000TH DORMY HOUSE

A thousand Dormy houses have now been built in Britain, the 1,000th being opened recently on a new estate at Pondfield Road, Orpington.

Designed by the chief architect of Wates, Ltd., Mr. K. W. Bland, A.R.I.B.A., the Dormy house was introduced at Crawley New Town in 1957, since when it has been built throughout the country by the firm and some 60 licensed builders. It consists of four bedrooms, two bathrooms, a 30ft. overall lounge and dining-room with dividing doors, a fitted kitchen, a private patio and a brick-built garage. The price ranges from £4,500 to £8,000, depending upon internal finishes and fittings.

### WORKING NEAR ELECTRICITY MAINS

A poster calling attention to the need for caution when operating cranes and excavators in the vicinity of overhead and underground electricity lines is now available from the Federation of Civil Engineering Contractors. The poster is expressly designed to remind drivers to take special care in these circumstances.

Printed in black and red on self-adhesive paper, the poster is intended for display in the cabs of the drivers' machines. It is being issued by permission of Eastern Electricity.

Copies of the poster, size approximately 8½in. x 5½in., can be obtained from the Head Office of the Federation, price 9d. for one copy; 8s.-12 copies; 15s. 6d.-25 copies; and £1 10s.-50 copies.

### TESTIMONIAL DINNER TO MAJOR MAITLAND

DISTINGUISHED members of the Institution of Structural Engineers from many parts of the country last week attended a dinner in London in honour of Major R. F. Maitland, O.B.E., who retired last September as secretary of the Institution after thirty-one years' service.

Many tributes were paid to Major Maitland's services at the dinner and congratulatory messages were received from branches in South Africa, Nigeria, East Africa and the Rhodesian Federation as well as from members at home.

In the course of the evening, Major Maitland received a number of presentations.

First, a gift from the officers of the branches in appreciation of the unfailing help and service he has given them. Then the President, Mr. F. R. Bulen, B.Sc.(Eng.), M.I.Struct.E., M.I.C.E., on behalf of the Institution received from members of the Council a portrait of Major Maitland painted by Mr. Reginald Lewis, R.P., N.E.A.C., a copy of which was presented to Major Maitland. Finally, a cheque for £2,500 and a Testimonial bearing the signature of many hundreds of members of the Institution who contributed was presented to him by the Immediate Past-President, Lt.-Col. G. W. Kirkland, M.B.E., M.I.Struct.E., M.I.C.E.

The high regard and affection in which Major Maitland is held by members of the Institution in all parts of the world were amply demonstrated at this delightful informal dinner.

### SPECIALIST ENGINEERING CONTRACTORS

#### New Joint Committee Established

A new body has been set up to deal with matters of common interest to industries engaged on specialist engineering work on building and civil engineering projects.

The body, which is the culmination of a number of years of informal co-operation between the founder-members, is called the Committee of Associations of Specialist Engineering Contractors (C.A.S.E.C.). The founder-members are the Association of Heating, Ventilating and Domestic Engineering Employers; British Constructional Steelwork Association; and Electrical Contractors Association (Incorporated).

A spokesman for the new body told *The Contract Journal* that it was hoped the Committee would provide a simple and quick means of consultation with specialist engineering contractors and would serve as a negotiating body on matters of common interest.

Membership would be open to any trade association representing specialist engineering contractors engaged on building and civil engineering projects.

### HOUSING PROGRESS

The Housing Progress Reports presented to Parliament as White Papers by the Minister of Housing and Local Government and the Secretary of State for Scotland show that the number of permanent houses completed in Great Britain during September was 24,824 compared with 26,242 in 1960.

In the first nine months of 1961, 216,827 permanent houses were completed compared with 218,491 in the same period of 1960.

### Late Construction News

**SHEFFIELD HOUSING TENDERS.**—Tenders from 24 firms and the direct labour department are to be invited by Sheffield City Council for the development of their Middlewood Road site. A total of 398 dwellings are to be erected on the site.

**NEW FIRE STATION.**—The tender of West and Sons (Leeds), Ltd., Hughenden Rooms Lane, Morley, at £125,000, has been accepted by Dewsbury Watch Committee for the erection of a new fire station.

**L.C.C. DEVELOPMENTS.**—Three extensive schemes have now been put out to tender by the L.C.C. They comprise: Brandram Works site, Neptune Street, Bermondsey—two 21-storey point blocks and five blocks of maisonettes and flats (Mercer and Miller, quantity surveyors, 10 Manchester Square, London, W.1); Collingwood Street areas, Bethnal Green—six blocks of dwellings, garages, etc. (R. A. Harwood and Partners, quantity surveyors, 49 St. Petersburg Place, London, W.2); Camberwell Friary Extension site—nine blocks of maisonettes and flats (L.C.C. quantity surveyors). Plans for each scheme have been prepared by the council's own staff.

**CONNNAH'S QUAY CIVIC CENTRE.**—Work has just started on the second phase of the Connah's Quay civic centre scheme—the provision of new urban district council offices. The work will take about 18 months and is being carried out by G. and R. Brimblecombe, Ltd., Buckley, at a cost of £100,276.

**£163,121 TENDER RECOMMENDED.**—Newcastle (Staffs.) B.C. have been recommended to accept the £163,121 tender of Madew and Wardle, Ltd., Market Lane, Newcastle, for 86 dwellings and 18 garages at Thistlebury Housing Estate.

**DUKINFIELD DWELLINGS.**—A tender of £298,860, submitted by Thos. Partington and Son (Builders), Ltd., Stock Lane, Chadderton, Manchester, has been accepted by Dukinfield B.C. for the erection of 200 dwellings at Yew Tree Estate. Roads and sewers on the site are to be constructed by W. Snape and Sons, Ltd., Clifton Road, Eccles, at a cost of £46,903.

**WATER SUPPLY SCHEME.**—Roger Hughes and Co., Ltd., Old Colwyn, have been awarded contracts 1 and 2 of Hiraethog (Denbighs.) R.D.C.'s water supply scheme. Worth a total of £155,000 the contracts provide for about 33 miles of asbestos-cement mains and two reinforced concrete service reservoirs. The consulting engineers are Howard Humphreys and Sons, West Street, Epsom, Surrey. Work recently commenced.

**ESHER HOUSING ESTATE.**—R. E. Styles (Ditton), Ltd., Long Ditton, Surrey, are to build 48 dwellings at Littleheath Farm Estate, Oxshott, for Esher (Surrey) U.D.C., at a cost of £123,436.

### GO-AHEAD FOR HYDE PARK UNDERGROUND GARAGE

Mr. Ernest Marples, Minister of Transport, and Lord John Hope, Minister of Works, have authorised the Westminster City Council to begin work on the Hyde Park underground garage near Speakers Corner.

The garage will be built for the City Council by Sir Robert McAlpine and Sons, Ltd., at a cost of rather over £1m. (*The Contract Journal*, October 12). Excavation should begin within the next few weeks, after a fence has been constructed around the site. The work is scheduled to take 60 weeks.

### U.S. ORDER FOR LEYLANDS

Included in U.S. orders, valued at \$60m. (£21,400,000), which were placed at the recent London Motor Show, was one for Leyland Group trucks worth \$3m.

Placed by Leyland Motors (U.S.A.), Inc., the contract calls for over 350 diesel-engined Beaver, Chieftain and Clydesdale haulage and tractor models, with maximum gross ratings from 24,000lb. to over 31,000lb.

## LEEMING BY-PASS OPENED

### More Dual Carriageways on Great North Road

THE three-and-a-half mile long Leeming By-pass, on the Great North Road (A.1.) was recently opened to traffic. Built by direct labour at an estimated cost of £1m. the By-pass was constructed in nineteen months.

Whilst this is an all-purpose road, access to it has been restricted, for where the By-pass crosses other public highways, they have been either taken over or under it—at two points, link roads have been provided. The new road connects at either end with sections of the Great North Road already provided with dual carriageways. Of the 33 miles of the Great North Road in the North Riding, there is now a continuous length of 26 miles of dual carriageway.

At the southern end of the Great North Road in the North Riding, work has begun on the Boroughbridge By-pass; at the northern end it is expected that work will shortly begin on the Darlington By-pass.

When these two works are completed, there will be dual carriageways on the Great North Road throughout the North Riding.

#### Use Of Lean-Mix

The layout for the Leeming By-pass provides two 24ft. carriageways with hardened shoulders. The carriageways are wholly constructed of lean-mix concrete on which is laid two-coat hot rolled asphalt. As gravel and sand were immediately to hand, and this was the cheapest available material, both bottoming and the foundation proper of the carriageways were constructed in lean-mix concrete; the bottoming had a minimum thickness of 9in. and the foundation proper consisted of two layers of 5½in. and 5in respectively.

#### Mixing Plant

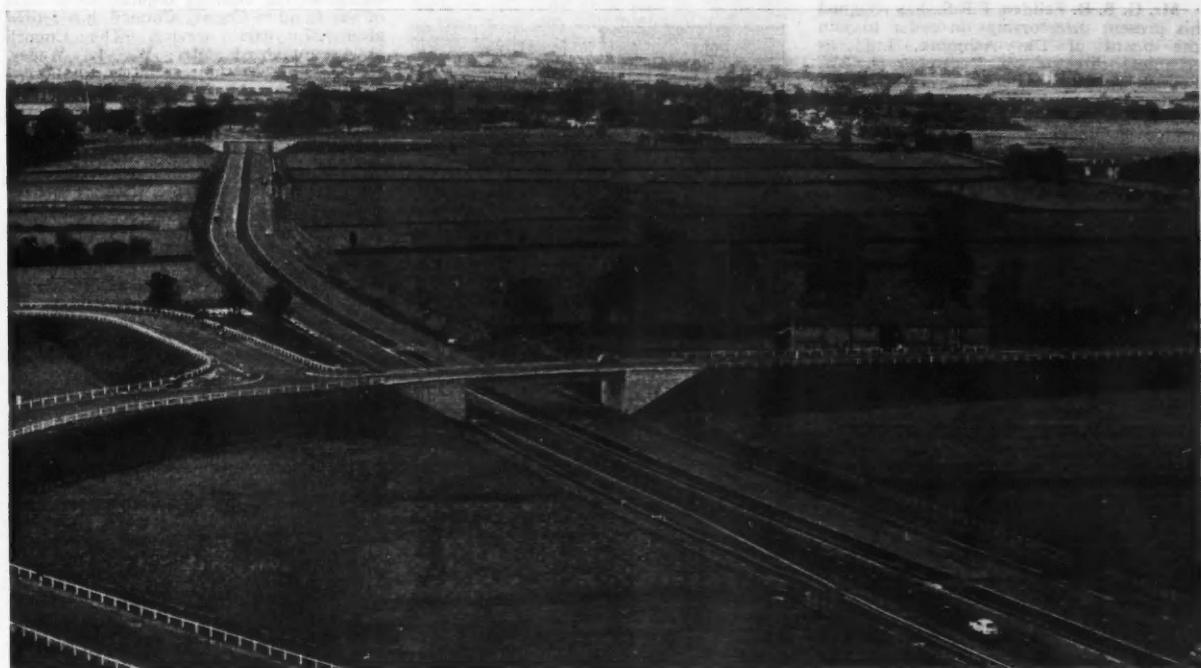
For the purpose of mixing the large quantities of lean-mix concrete a 2 cu. yd. "Feimert" turbo-mixer was employed; this was fed by a fully automatic weigh-

batcher which weighed both water, cement and aggregate, and the plant was driven and operated by electricity and compressed air. The capacity of the mixing plant was such that each 2 cu. yd. batch was completely dealt with within one minute; the mixing time being 30 seconds; the maximum daily output being of the order of 1,000 cu. yd.

#### Bridges

There are three bridges carrying county roads over the By-pass: one bridge carrying the By-pass over a Class A road; another over a railway; and lastly one over a stream. These bridges have abutments and wing walls of mass concrete, faced with natural stone Ashlar masonry and superstructure either of welded girders or universal beams carrying reinforced concrete decks designed as a composite structure with those girders or beams.

The By-pass, and in fact the whole of this completed 26 miles of dual carriageway, was constructed by direct labour by the North Riding County Council acting as agents of the Ministry of Transport, under their County Surveyor, Mr. R. Sawtell, A.M.I.C.E.



Leeming By-pass

## TRANSPORT IMPROVEMENT NOT SIMPLE ISSUE OF MORE ROADS, SAYS MINISTER

SPEAKING at the annual dinner of the British Road Tar Association held in London last week, Mr. John Hay, M.P., Joint Parliamentary Secretary, Ministry of Transport, said that the road programme was only part of the task of modernising the national transport facilities. We had to look at the global investment in transport and seek to make the right decisions as to the division of public funds between road and rail.

It was not, as some would say, a simple issue of steadily increasing the road programme. We had to look to the improvement of our transport system as a whole in the interests of our industrial efficiency in a competitive world.

Earlier the Minister had pointed out that last year, 1960-61, capital investment

on new road construction amounted to £97 million and on railway modernisation £162 million. In the current year it was estimated that for roads capital expenditure would be in the region of £110 million and for railways £145 million. This expenditure on transport amounted to 15 per cent. of the total capital investment in the public sector.

The Government had to ensure that transport expenditure did not get out of proportion with sums they had to find for other purposes and that as between road and rail they got the balance right.

#### Far-sighted Planning

Mr. Hay said the Ministry of Transport were well aware of the need for far-sighted and intelligent planning. As far as they were concerned this meant the settlement for a suitable and realistic number of years ahead of the lines on which they wished

to progress; the allocation of appropriate sums of money to meet their commitments as projects came forward; and ensuring continuity of work without unexpected stops and starts or gaps in the fulfilment of their programmes.

The Minister had a word of praise for the work of the B.R.T.A., especially in the field of research and technical service and said the Ministry were grateful for the work they did. The Ministry were also appreciative of the versatility and high quality of the product with which the Association was concerned.

The Minister was welcomed by Sir Henry Jones, president of the Association, who presided.

## ANGLO-SWEDISH POWER AGREEMENT

English Electric Co., Ltd., have concluded an agreement with A.S.E.A. (Allmanna Svenska Elektriska Aktiebolaget) of Västerås, Sweden, to cover the exchange of patents and patent rights in the field of high voltage DC transmission.

## Men and Movements

**M**R. J. M. OSTROWSKI, a director and general manager of Braithwaite Foundations and Constructions, Ltd., is visiting Tasmania to inspect work on the new Tasman Bridge at Hobart. He will also be visiting New Zealand, and both there and in Australia he hopes to meet engineers and public authorities with interests in the provision of special foundations for bridges, buildings and marine structures.

Blaw Knox, Ltd., have announced the appointment of Mr. A. J. Bass, Mr. J. G. E. Davies, Mr. S. L. Ward and Mr. A. W. Wyld, D.F.C., A.F.M., of the transmission and radio tower division, as divisional directors.

The Ministry of Works have announced that Mr. W. T. Lewis, C.B.E., regional director of the south western region for the past five years, has retired. He is succeeded by Mr. A. W. J. Scoble as regional director at the Ministry of Works regional office, Westbury-on-Trym, Bristol.

**M**r. G. B. R. Feilden, F.R.S., has resigned his present directorships in order to join the board of Davy-Ashmore, Ltd., as technical director on December 4. Mr. Feilden will be based at the group's London headquarters, and will also be joining the boards of the principal operating companies of the Davy-Ashmore group.

**M**r. D. G. Sillars has joined the board of Tarmac Roadstone, Ltd.

Following the completion of the merger between The Plessey Co., Ltd., Automatic Telephone and Electric Co., Ltd., and Ericsson Telephones, Ltd., Mr. A. F. Roger, chairman of Automatic Telephone and Electric, and Sir Harold A. Werner, chairman of Ericsson Telephones, have been appointed to the board of The Plessey Company.

Durapipe and Fittings, Ltd., have appointed Mr. D. C. B. Chandler as United Kingdom sales manager. Mr. Chandler joined the sales force of the company in 1956.

**M**r. R. L. H. Damerham, technical director of Durapipe and Fittings, Ltd., has been elected chairman of the new thermoplastic pipe and fittings group of the British Plastics Federation.

**M**r. J. A. Tacchi has joined W. and J. Armstrong (Contractors), Ltd., as plant sales manager.



Mr. Cyril M. Cohen, chairman and managing director of the George Cohen 600 Group, Ltd., was recently presented with a cigarette box from the Group's employees to mark the completion of 45 years' service with the Group. The photograph shows the presentation being made by Mr. D. W. Cooper, a director of George Cohen, Sons and Co., Ltd.

**D**ewhurst and Partner, Ltd., of Hounslow, announce the appointment of Mr. E. Trattles as western area sales manager, to operate from the company's Gloucester office. Mr. Trattles was for some years with Allen West, Ltd., as eastern counties representative.

The Brockhouse organisation have announced that Mr. S. C. Lloyd, of Brockhouse Trading Facilities, Ltd., has left for a tour of Greece and Yugoslavia. He will spend approximately two weeks in Greece, mainly in Athens, followed by a week in Yugoslavia, mainly in Belgrade.

Appointed an additional director of the Haraura group is Mr. Ronald A. Holland.

Matbro, Ltd., have announced the appointments of Mr. Tony Darling as sales director, from sales manager, and Mrs. Margaret Thomson as company secretary, from chief accountant. Mr. Darling was concerned with the design of the first Matbro forklift truck in 1949, in a drawing office capacity. Later he joined Towmotor



MRS. THOMSON

T. DARLING

Corporation, Ltd., U.S.A., for two years, returning to the U.K. in 1956 to take up the appointment of sales manager with R. H. Corbett and Co., Ltd. In 1958, he rejoined Matbro as sales manager, forklift truck division. Mrs. Thomson joined the company on its move to Horley in 1959 following service with a local organisation as chief accountant.

**M**r. Leslie Davies has been appointed a director of Pulsometer Pumps, Ltd., and has assumed the responsibilities and title of works director.

**M**r. A. E. Rees, the regional manager of Andersons' Rubber Co., Ltd., based in London, has been appointed to the board. He was previously with S.G.B., Ltd., at their Mitcham office.

A recent addition to the board of S.L.R. Electric, Ltd., is Mr. Gordon Singleton, who was previously with General Electric Co., Ltd.

**P**rofessor K. G. Denbigh, Professor of Chemical Engineering Science at the Imperial College of Science and Technology, has been appointed to the Courtaulds Chair of Chemical Engineering at the Imperial College.

The new chief estate and rating surveyor to British Transport Commission is Mr. R. G. Henbest, previously estate and rating surveyor, Western Region, British Railways.

**M**r. A. Lockwood has joined the north western area staff of Edison Plant, Ltd., as the area manager based upon the company's Heckmondwike depot. Mr. R. Ferguson, the north western area manager, retains the overall control of the area from the Ramsbottom depot.

**M**r. N. D. Gilbertson has been appointed senior sales executive of the new factories division of Middlesex Prefabricated Buildings, Ltd., a company in the JEL group.

Among passengers recently arriving in this country from New York were Mr. J. P. Woollam, vice-chairman of Simon-Carves, Ltd., and Mr. C. A. Parson, a director of Guest, Keen and Nettlefold, Ltd., who both disembarked from the "Sylvania" at Liverpool.

The London firm of quantity surveyors, Cyril Sweett and Partners, have announced that by mutual consent Mr. W. S. Kirkby has ceased to be a partner, and Mr. G. R. Browne has been made a partner. Mr. R. H. Howard and Mr. M. W. Parrott, who have been with the firm for many years, have been appointed associates.

Stuart B. Dickens, Ltd., have appointed three more representatives: Mr. M. Dove will cover the area from Hampshire to Kent, operating from Wonersh, near Guildford; Mr. F. Carey will cover London north of the Thames, operating from head office; and Mr. A. McMahon will cover the Scottish lowlands area, operating from Kirkcaldy.

### MUNICIPAL

**M**r. Edwin Williams, senior architect in charge of the building regulations division of the London County Council, has retired after 27 years' service. The Council have appointed Mr. W. J. Wadey, F.R.I.C.S., as a senior architect to succeed Mr. Williams as head of the building regulations division in the Architect's Department.

The new county architect with Herefordshire C.C. will be Mr. Vincent Brown, who has been with the Council since 1939. He will succeed Mr. W. Usher on January 1.

**M**r. John Finn, chief assistant engineer to Lincolnshire River Board for several years, will succeed Mr. F. H. Tomes as chief engineer next February.

Leeds City Council have been recommended to appoint Mr. E. W. Stanley, B.A., (Hons.Arch), A.R.I.B.A., A.M.T.P.I., as deputy city architect. He is at present assistant city architect (education and general) at Sheffield.

The city architect at Hereford, Mr. F. Brock, has resigned.

Dundee Corporation have appointed Mr. James T. Robertson as deputy water engineer. Mr. Robertson was previously assistant distribution engineer at Bristol.

Bradford City Council have been recommended to appoint Mr. S. Asquith to the post of waterworks engineer as from January 1. He is at present deputy waterworks engineer.

**M**r. R. Cowbourne, deputy surveyor to Bingley (Yorks) U.D.C. has been recommended to the Council as the successor to Mr. J. S. Lattin, surveyor, architect and lighting engineer. Mr. Lattin, who has held his position for 17 years, retires in December.

The new chief town planning officer at Middlesbrough is Mr. William Bean. Previously deputy area planning officer at Harrogate for West Riding C.C., Mr. Bean succeeds Mr. J. Worthington, who has retired.

The borough engineer at Grantham, Mr. Stephen L. Mitchell, has been appointed to a similar post at Batley.

Colne B.C. have been recommended to appoint Mr. G. E. Whittaker deputy borough engineer and surveyor. He is at present deputy engineer and surveyor to Denton (Lancs.) U.D.C.

The new engineer and surveyor to March (Cambs.) U.D.C. will be Mr. Roy Wentworth Nash, at present chief assistant engineer to Hatfield (Herts.) R.D.C. He will succeed Mr. W. S. Pickett, who is due to retire in January after 32 years' service with the Council.

## COMPUTERS AND THEIR APPLICATION TO THE PRODUCTION OF BILLS OF QUANTITIES

By D. A. Smart, B.Sc.(Econ.)\*

As far as the general public is concerned computers and their uses are still shrouded in a world of mystery. This is most unfortunate and completely unnecessary.

To understand how a computer works naturally requires an electronic engineering background, but the uses and potential uses of a computer can be understood by anyone with a little common sense.

A computer can be looked upon as a very large accounting machine, with a large number of registers (called "words") which can be used to accumulate numbers or to store instructions or other alphanumeric information. In addition to these storage facilities it contains an arithmetic unit which is capable of addition, subtraction, multiplication and division. The computer can also be instructed to take logical decisions. For instance it can be asked to look at a number in one of its registers and if that number is negative to do one thing, and if the number is positive, it can be made to do something else.

These instructions can be written in two ways—either in machine code language, or in autocode language. In the former case certain numbers and symbols are punched on to paper tape and fed to the computer. These numbers define which function has to be obeyed by the machine.

For example: 30 101 : 04 102  
20 103 :

This set of orders means pick up the contents of register (work) number 101, add the contents of 102 to this and store the addition in register (word) number 103.

In the case of autocode language the instructions are written in pseudo mathematical terms.

For example: READ A  
READ B  
 $C = A + B$   
PRINT C

This means read a number from the paper tape reader into the computer, allocate a register and call it "A," do the same with "B," add "A" and "B" together and store it in a register called "C" and print this answer.

Obviously this latter method of programming in autocode is easier and quicker than the machine code method. It is, in fact, very speedily learnt.

However, using either method the instructions are transferred on to punched paper tape, read into the computer and preserved in the computer store. Subsequently these store locations are set one at a time into the order register of the machine, and it is from this position that the instructions are actually obeyed.

### Problem and Proposed Method

The computer is required to produce bills of quantities using the dimensions from the taking-off sheets, and a library list of the standard descriptions and preambles.

The computer method involves firstly building up the standard library, these details are punched on to paper tape and written on to a magnetic tape—which constitutes a part of the computer store. It is estimated that one 3,600ft. reel of tape would hold the complete library—i.e., allowing for 50,000 preambles, preliminaries and descriptions. The computer could read this completely in under five minutes!

Once the standard library is constructed, the next stage is to punch dimensions details from the taking-off sheets, plus a reference code number to the relevant library description. These dimension items are read and rearranged within the computer into a list in the order of the reference

code numbers, so that they are in the same sequence as the library record itself.

It only remains to compare this list with the library and to print out the dimensions, extended where necessary, together with the appropriate description. The printing is by means of a 600 lines per minute printer and the format is very similar to the present one.

### The Equipment

The basic input to the computer is eight-channel punched paper tape. Against each position on the tape a combination of up to eight holes is punched. Each of these combinations represents a number, letter, punctuation mark or other symbol.

This tape is prepared using a tape punch with a very similar keyboard to an ordinary typewriter and it is checked for accuracy by a second operator using a verifier machine. A copy of the original tape is made at the same time and as errors are located they are automatically corrected by the verifier operator.

The computer recommended to handle the production of bills of quantities for firms in the London area is the Elliott 503. This system would be capable of producing over 1,300 bills in a year.

It consists of two paper tape readers for basic input purposes and two paper tape punches which produce tape for subsequent sundry printing. The central store of the machine consists of 8,192 registers (or words) of core storage. The access time to any one of these locations is 31 micro-seconds! About 62,000 additions or subtractions can be performed in a second and nearly 20,000 multiplications per second! In addition to the core store three magnetic tape decks are to be used. These hold the magnetic tape which, for example, contains all the details of the standard library. These data are read section by section from the tape into the core store where any processing actually takes place. A 600-lines-a-minute printer is provided to produce the printed bills. This prints one line at a time in a manner somewhat like an ordinary punched card tabulator. One hundred and twenty character positions are available on each line and each position has a repertoire of 56 characters.

### The Standard Library

The main problem encountered in considering this computer application is the difficulty of defining the master file of preambles, preliminaries and descriptions which are required for the bills. It is estimated that there are 50,000 such items which are in general use and which will cover perhaps 90 per cent. of the requirements for a particular bill.

Each item requires a unique reference code to define that particular description.

This code consists of:

- the indicator (specifying the part of the building for cost analysis purposes, e.g., sub-structures and external structures)
- the trade
- the section of the trade
- the descriptive heading within the trade section
- the item type (specifying whether the item is a cube, super, run or number and whether the description number following uses a sequential, fully representative or partly representative code)
- the description number.

(a) to (e) can all be represented by one alphabetical character; (f) requires four numeric digits.

When punched on to paper tape, these codes will be in the form:

Is ABCDE fs 1234

(Is = letter shift symbol;

fs = figure shift symbol).

The four-digit description number is one of three types: either a fully representative code, or a partly representative code, or a sequential code.

In the first case (e.g., 1/2/3/4) each individual of the four defines one phrase of alphabetic description so that the four digits together provide a full description.

In the second case (e.g., 12/34) the first two digits specify a part description which is common to several items. The final two digits are serially numbered within the first two.

In the case of a sequential code (e.g., 1234) the descriptions are serially numbered using all four digits and is of most value where part descriptions for items are non-repetitive and nothing can be gained by a representative coding technique.

The codes described previously define and locate the item (or preamble) description in the standard library, but to preserve all possible sizes for any description would not be easy since the various combinations are obviously very large. Instead, the size part of the description is fed into the computer with the actual dimensions, and is only temporarily stored in the system until the appropriate description is found and then the two together are printed out on the bill of quantity.

Sizes are coded very simply, that is, in exactly the same way as they are required to be produced on the final bill. They are either in the form XX sp X sp XX \* if no fractions are involved, or XX sp X sp XX—XX/XX \* if a fractional length is involved; e.g., yards, feet, inches and fractions of an inch.

The standard descriptions are stored within the computer in alpha-numeric order according to their reference codes. The building up of tape records involves punching on to paper tape the code letters and numbers followed by the appropriate description and a conversion factor, if applicable. This conversion factor indicates what constant number is to be used to divide into quantities which are subsequently extracted from the taking-off sheets (e.g., to reduce square feet to yards superficial). These paper tapes are read into the computer and written in the same form as they are required to be printed on the bill.

From time to time, additions, amendments and deletions have to be made to these records.

The method employed is to read the original tape records into the core store of the computer. At the same time the amendments, which are punched on to paper tape in code number order are read into the system and the necessary alterations made to the core store. The amended details are then copied on to a second magnetic tape.

### The Computer Method

The taking-off procedure from drawings remains the same as at present except that two extra columns are necessary on the dimensions sheets for the insertion of the reference code and of the size description. These have to be written in against the measurements.

A page on the dimensions sheet might look as follows:

Reference No.	Size	Code	Dimensions	Abbreviated Description
ABCDE 1634	2/3/2/		7.0	Formwork to vertical
			8.6	B.6 face of conc. wall
	2/3/2/		9.8	
			5.6	
ABCDE 1456	2	/232.2	Formwork to vertical	
			5.0	face of retaining wall
	2 /	18.8		
			5.6	
	2 /	7.1	Dot last	
			4.105	

The "S" symbol indicates that this set of dimensions is to be deducted for this reference number.

If a description is required which is not included in the standard library and in consequence no reference code is in existence a dummy code is allocated (e.g., in the form AACED 9999).

The letters prefixing the numbers will

\*Paper presented at a recent meeting of the Royal Institution of Chartered Surveyors in London.

define the appropriate trade/sub-trade heading but the individual items cannot be found. These non-standard items are referred to as "rogues."

The reference code, size, dimensions together with a reference to the relevant page on the taking-off sheets and an indication as to whether the item is to be deducted or not is next punched on to paper tape and verified. These operations can either be performed at the office from which the work originates or on the other hand at a central service bureau. The first suggestion has the advantage that any queries arising could be readily cleared. The paper tape thus produced is sent to the computer and written on to a magnetic tape. The items are still in the same order as they were on the taking-off sheets and have now to be rearranged into ascending order according to the reference code number. The computer is capable of sorting items very rapidly and several standard programmes are available to do this. The size of the reference code is immaterial in this respect and the time taken is the same whether the sorting key (i.e., the reference code number in this case) is a one digit number or a nine digit reference.

Once this rearrangement is complete a magnetic tape is written containing all dimensions items in order by the library reference code. The standard library tape containing all the descriptions, etc., is placed on the computer and read in conjunction with this dimensions tape. Both these tapes are, of course, in the same sequence and as the appropriate description for a reference code on the dimensions tape is located in the library so the description is printed out on the line printer. Simultaneously all dimensions for that particular code are accumulated and conversion factors are applied and the result is printed out to the right of the description in a manner very similar to the present procedure.

If necessary, details for each item including reference to the relevant taking-off sheet can be punched out on to paper tape at the same time and this by-product of the main job can be subsequently printed on automatic electric typewriters. These typewriters have a paper tape reading mechanism which automatically operates the printing device.

In those sections of the library where fully or partly representative coding is employed, "ditto's" will be printed out on the bill where appropriate. For example, if under the same trade, sub-trade heading the descriptions required are for fully-representative codes:

1 2 3 4  
1 2 3 7  
1 2 4 7  
1 2 4 8

the printing will appear thus ("full" means a full description is provided):

Full (1) Full (2) Full (3) Full (4)  
Do Do Do Full (7)  
Do Do Full (4) Do  
Do Do Do Full (8)

Where the required descriptions are non-standard and are not found in the library (i.e., "rogue" items), the reference code is printed out together with the relevant taking-off sheet number, and sufficient space is left on the print-out to enable a description to be entered by hand afterwards.

#### Costs

The costs of these operations vary according to two things. These are firstly the number of dimensions—cubes, runs, squares—recorded on the taking-off sheets and secondly the number of entries on the bill of quantity.

A small-sized bill with say an average of 2,250 dimension items and 1,170 descriptions on the bill would cost about £115 at the present time using the 803 Computers in the Elliott Service Bureau, although this figure would reduce to £75 when a 503 Computer becomes available. The corresponding figures for large-sized bills with say 15,000 dimensions and 3,900 entries on the bill are £460 using the 803 and £325 using the 503.

## LARGEST EVER TRAFFIC SURVEY OF SOUTH WALES

**A DETAILED** traffic survey of South Wales—the largest ever carried out in Britain—has revealed that no less than 47 per cent. of the 423 miles of rural trunk roads there are carrying more traffic than they should be called upon to carry. Nine per cent. are carrying twice as much as they should. This is based on fixed traffic capacities which, by the official Ministry of Transport scale, are used in the design of rural roads.

At a Press conference in London last week, Lord Derwent, chairman of the British Road Federation, said: "The survey shows what can be done. The Government should immediately institute similar surveys in the many other overcrowded areas of the country, for only by such research can a proper assessment be made of the road needs now and in the future."

The work in South Wales—where for years industrialists, who rely to a large extent on the roads for carriage of their goods, have been worried by increasing congestion—was instituted by the Industrial Association of Wales and Monmouthshire, in collaboration with local highway authorities and the British Road Federation. It was carried out by Mr. C. P. Andren, A.M.I.C.E., in association with R. Travers Morgan and Partners, consulting engineers.

Lord Derwent said he was dismayed at at the reprehensible state of the roads in South Wales. "In parts, their condition would be laughable if it was not pathetic."

It was quite ludicrous that one of the most important of Britain's industrial regions should be trapped in this web of traffic at a time when "more productivity" was the cry.

Among numerous road schemes regarded as essential is an extension of the London to South Wales motorway. The Government intend this to end at Newport. The consultants say it must be extended about 60 miles to Llanelli.

They recommend that ten most-needed major schemes should be carried out over the next seven years at a cost of £86m. The remainder should be executed during the following 13 years at a cost of £34m.

"Of the other requirements highlighted in the report, work is in progress on part of the Heads of the Valleys Road and more of this 25-mile length of new road will be

commenced very shortly. The road from Ross to Newport will be improved to two-lane dual carriageways in the next few years; work on the easternmost part has started. The Whitchurch By-pass, now in use, is the first part of the comprehensive improvement of the Taff Vale road. The Newport Borough Council is well forward with its plans for the construction of a new bridge over the River Usk. The Minister has promised to consider a 75% grant towards this scheme in the current year."

#### Ministry's Comments

Following the publication of the Report of the Industrial Association of Wales and Monmouthshire, entitled "Assessment of the future highway requirements of South Wales and Monmouthshire," the Ministry of Transport stated:

"The Minister of Transport, Mr. Ernest Marples, welcomes the initiative of the Industrial Association of Wales and Monmouthshire in commissioning this very useful report. It will receive careful study in the Department."

"The Minister fully recognises that some roads in South Wales are overloaded and that in places there is congestion. But similar conditions exist in many other parts of England and Wales. For example, the report states that 9% of the trunk roads in South Wales were carrying double their design capacity. In England and Wales as a whole, the proportion was 15%. In considering the needs of South Wales for improved roads, the Government must have regard to the highway needs of the country as a whole and to the many other claims on the economy."

#### £50m. Plans

"Even so, under the Minister's present plans, new construction and major improvements to the value of over £50m. will be put in hand on roads in South Wales and the approaches to it during the next six or seven years. These plans include many of the recommendations made in the report. The London-South Wales motorway will be carried across the Severn Bridge and extended to Newport, which will be bypassed. The port road from Newport to Swansea will ultimately be provided with dual carriageways. Part of this project is already complete and further sections, notably the Port Talbot By-pass, are due to be undertaken very soon."

## BRICK AND CEMENT PRODUCTION

### Advance Ordering For Bricks Still Necessary

According to figures collected by the Ministry of Works, 630 million bricks were produced in Great Britain in September, about the same number as in September last year, and bringing the total production for the first 9 months of the year to 2 per cent. above the level for the same period of 1960. Stocks were 17 per cent. higher at the end of the month than a year ago but it is still necessary to place orders well in advance if delays in delivery are to be avoided.

#### Cement

During the 4 weeks ended October 2, 1,115,000 tons of cement were manufactured in the United Kingdom, an increase of 6 per cent. over the 1,047,000 tons produced in the same period last year. In the first 9 months of the year production was 7 per cent. and deliveries 12 per cent. higher than in the first 9 months of 1960.

Some 41,000 tons of cement were imported in August compared with 20,000 tons in August, 1960, bringing the total for the first 8 months of the year to 144,000 tons, 70,000 tons more than for the same period last year.

## BIGGEST-EVER EQUIPMENT SHOW

### Providing A New Look For Factories

Equipment and machinery produced by over 350 firms will be seen at Earls Court, London, on November 13 when Dr. Richard Beeching, chairman of the British Transport Commission, opens the International Factory Equipment Exhibition.

Now in its ninth year the exhibition will occupy both floors at Earls Court, amounting to some 375,000 sq. ft.

This year, for the first time, the exhibition is grouped in 14 separate sections, each one corresponding to a major division of industry. It is sponsored by the London Chamber of Commerce, *The Financial Times* and *Industrial Equipment News*.

Concurrently with the exhibition, the British Productivity Council is organising two conferences entitled "Efficiency in Today's Factory" (Monday to Wednesday) and "Producing for European Markets" (Thursday). Titles in the main conference include "Organising for Product Quality", "Fitting the Job to the Worker", "Industrial Change and Human Effects", "Low-cost Automation" and "The Effective Use of Capital". Speakers include leading figures from industry, commerce, research and advisory organisations, educational establishments, and employers and trades union representatives.

## RESULTS OF RECENT RESEARCH ON BITUMINOUS ROAD MATERIALS

TWO lectures were given by MR. J. H. NICHOLAS, M.A., head of the bituminous materials section of the Road Research Laboratory, (D.S.I.R.), at the invitation of the London and Counties Road Tar Association, to senior engineering officials of county and local authorities in the southern counties. The first was at Richmond, and the second, at Tunbridge Wells. On each occasion there was a good muster of officials, together with representatives of manufacturers of road materials and tar distillers.

Mr. Nicholas dealt principally with two aspects of the work of the Laboratory: (a) the properties of the structural elements of the road and the part they play in carrying the traffic, and (b) the part that a bituminous running surface can play in reducing skidding accidents. He had often been told by surveyors that they did not see why certain traditional methods of road construction should be abandoned, or even condemned. The simple answer was that things had changed radically over the last few years. We were now faced with a new set of conditions, and experience was not necessarily the best guide: some radical rethinking had to be done.

In 1954 it was estimated by the Road Research Laboratory that traffic on the roads of this country would increase at the rate of 6 per cent. per annum, which would mean that it would be doubled in about 10 years. In 1959 there was an increase of 12 per cent.: at this rate, it would be doubled every six years. Weight of traffic was increasing all the time, but the speed was also increasing and, worst of all, acceleration and deceleration were greater than they had ever been.

Moreover, the pattern of road building had altered: mechanisation had arrived in a big way, and this had changed the type of material that one could use for road construction. A point which was not often appreciated was that new roads were now expected to take heavy traffic immediately after laying and, with traffic of the magnitude now involved, this presented a serious problem. He knew of at least three major instances during the last two or three years where surveyors had constructed a short length of road by the traditional methods and had met with disaster, due to the volume of traffic immediately imposed upon the new construction. The safety margin was no longer there: surveyors no longer had the slow build-up of traffic over the years to provide compaction.

The present need for new and better roads with a limited budget meant that it was necessary to think all the time of the cost factor: but he thought one should think more often about the true economy of road construction rather than the initial cost. He felt very strongly that the question of lowest annual cost, including maintenance, over a period of years was more important than the lowest first cost.

### Pavement Design

Bituminous materials come into the picture of road construction at all stages: in fact, experience had amply confirmed that, as soon as the initial earth work was completed, the surface should be covered with a layer of tar or bitumen; a double surface dressing was required in some cases. The speaker recalled a job in the South of England where the Laboratory had insisted on a double surface dressing on that part of the formation to be covered with experimental construction. Despite subsequent heavy rain the experimental part of the construction was carried on without the slightest trouble but the remainder which had not been protected was seriously delayed.

One of the principal aspects of the work undertaken at the R.R.L. was a study of

the role of bituminous materials in the construction of stronger and better roads. They were trying to evolve methods of calculating the thickness of each layer of the road structure. These thicknesses depended upon the strength of the soil itself and the weight of traffic which the road would have to carry. What had not been realised hitherto was the importance of the role played by the strength of the individual layers. The problem was made more urgent by the fact that new types of base material were being evolved such as the cement-bound, tar-bound and bitumen-bound bases, and people wanted to know how best to use them. The increase in traffic made the matter even more urgent. The country was faced today with the biggest road-building programme since the Romans came.

The R.R.L. urgently required experimental sites, which should be level, heavily trafficked—and not too far from Harmondsworth!

### Bases

Mr. Nicholas gave details of comparison between the performance of roads made with different types of base. The preliminary series of experiments showed quite clearly that the road structure was much stronger when the surfacing was a dense material than when an open-textured material was used. With an open-textured surface the differences between bases were quite distinct: with a stronger, denser surfacing the differences were not so apparent, but they were of the same order; with all surfacings a coated base gave better results than an uncoated one. Another implication from these experiments was that an 8in. thick base was the minimum required for a heavily trafficked road, and, with some deformation taking place, it was wise to wait a little while before putting down the final surface. Unfortunately, motorists were intolerant of temporary surfaces.

Another experiment on a very heavily trafficked road in the Midlands showed that the contribution of the surfacing to the structural performance of the road depended on its elastic modulus, not on its resistance to penetration by water. The same kind of base was constructed throughout (crushed limestone) and this was surfaced with 4in. of different types of surfacing material (bitumen macadam, hot rolled asphalt and dense tar surfacing). Surface dressing was used at different levels in various sections to form impervious layers. It appeared that no matter where the surface dressing was put in an open-textured construction, it did not affect the structural performance of the road. The sections under the open-textured surfacing had failed: those under the rolled-asphalt and the D.T.S. were still satisfactory.

The most important pavement design experiment so far started was that at Alconbury Hill, on A.1, now almost four years old. This had confirmed the importance of a dense surfacing and had given valuable information on the relative performance of different bases; the best results were being obtained with the dense bituminous base material (rolled-asphalt basecourse mixture). No dense tarmacadam had been used in this experiment but other measurements on the load spreading properties and elastic moduli of bituminous mixtures had shown that the dense tarmacadam mixtures recently specified by the Laboratory had structural properties similar to those of the rolled-asphalt basecourse mixture. Further major experiments were planned to study in more detail the performance and equivalent thicknesses of different base materials.

A great advantage of black base material was the ease with which it could be laid and be ready for use almost immediately. Within a few hours, as soon as the material had cooled off, the next layer could be put

down without trouble. Traffic could be allowed to pass over even quite thin layers as a temporary measure although this was not recommended.

### Surfacing

The purpose of road surfacing is to spread the load to the lower layers in such a way that the safe stress in the material itself is not exceeded. A considerable amount of work had been done recently on the measurement of load-spreading properties of tar-bound basecourses and it had been found that a dense material with a hard binder made to Road Note 29 specification gave results comparable with a rolled-asphalt basecourse. As a result of this work the Ministry of Transport had agreed to undertake an extensive trial on the Stevenage By-pass motorway, using a dense tarmacadam basecourse with 54 deg. e.v.t. tar, which was being laid at the time of the lecture. A wearing-course of rolled asphalt would be superimposed.

### Skid-resistance of Flexible Road Surface

Good resistance to skidding on a wet road depended upon a number of factors, among which were the type of stone used, the binder and the surface texture. It had been found that a fine-textured material which gave good resistance to skidding at low speeds was inadequate at high speeds. Water could not get away quickly enough for the tyre to make contact with the surface of the road. Some materials which in the past had been suitable for main roads, were now, due to the increased speeds of all vehicles, quite unsatisfactory. The stone was probably the biggest single factor involved: all stones polished to a certain degree, and under modern conditions it was necessary to select the correct type of stone for a particular road. No surfacing could have a better resistance to skidding than the stone could provide.

If there were excess tar or bitumen on the surface giving a smooth texture, the sideways force coefficient was markedly reduced: the engineer's job was to ensure that this did not occur at least in the early life of the surfacing, but with the extraordinary compaction by modern heavy traffic it was now almost impossible to obtain good durability without the binder coming to the surface to some extent. All binders, when exposed to air, harden and are abraded by traffic. It was, therefore, vitally important when dealing with heavily trafficked roads, that for the surface material one should choose a binder which would wear off quickly, otherwise the stone could not play its part. The capacity of binders for wearing off, varies considerably: some bitumens weather slowly: on the other hand, tar wears off more quickly. The tar suppliers' claim that their materials are non-skid is thus quite correct, provided a good stone is used. In rolled-asphalt wearing-course material, it has long been the practice to use a proportion of Trinidad Lake Asphalt in the binder because this material also weathers from the surface to give a non-skid texture. The R.R.L. has shown that a similar result can be obtained in rolled-asphalt by mixing about 20 per cent. of a soft or medium-soft coal-tar pitch with a petroleum bitumen for use as the binder. Some difficulty was experienced at first with the preparation of a suitable pitch-bitumen mixture but these have been resolved by work at the R.R.L. and large-scale trials of rolled-asphalt wearing-course mixtures with pitch-bitumen binders are in progress. The first experimental sections of such mixtures are now more than 10 years old and indicate that durability is no problem with these mixtures. They are now being exploited on a commercial scale.

For the surface dressing of heavily trafficked roads, a binder was needed which would allow the chippings to play

their full part in maintaining a good surface texture and tar was most suitable for this purpose.

#### Discussion

During the discussions following the lectures the following points were made:

**MR. H. S. ANDREW, M.I.C.E., M.I.Mun.E.**, county engineer and surveyor, Middlesex, asked if the lecturer was completely satisfied with the present methods of testing for sideway force coefficients. He also sought further information on methods for providing a rough texture to facilitate the removal of surface water and give good skidding resistance at high speeds. Mr. Nicholas replied that the S.F.C. machine could be taken up to 50 m.p.h., but it would be extremely difficult to develop any test that was both simple and suitable for use at high speed. The R.R.L. used an X.K.140, with a trailer. It was clear, from the work undertaken, that the rough-textured road surface required could be obtained by superimposing coated chippings on a dense surfacing material or by surface dressing. The stones need not be more than  $\frac{1}{4}$  in.  $\frac{1}{2}$  in. proud, but there must be a good provision of such projections over the road surface.

**MR. S. A. STEWART, C.B.E.**, director of the British Road Tar Association asked whether a solution would not be provided by having a layer of impervious material covered by 1 in. of open-textured material, to create a labyrinth into which the water could escape. Mr. Nicholas said this had been considered already but the problem was that on any road the inside lane tended to get most of the heavy traffic, which travelled along two well-defined wheel tracks, where intense compaction occurred. No material that he knew of could remain open-textured in these circumstances. He thought it was far better to have a solid surfacing, with projections giving the rough texture.

**DR. J. R. DEWHURST**, South Eastern Gas Board, suggested that the best method of providing such a texture was by means of a high-quality surface dressing, spread over a dense wearing course before the road was opened to traffic. Mr. Nicholas agreed that this might well be tried.

**MR. S. A. STEWART, C.B.E.**, asked what length of time was likely to elapse before the results of the experiments on black bases could be assessed, in view of the current motorways programme. The lecturer said that he hoped that it would not be more than two or three years before further information would be available from the other major experiments shortly to be started which, together with the longer-term results from the Alconbury Hill experiment, would enable definite proposals to be formulated.

**MR. R. O. HANSON, A.M.I.Mun.E.**, divisional surveyor, West Sussex, referring to the cold-laid asphalt mixture used by his authority in the 1930's, using hard powdered bitumen, a slate filler and a flux, which had given good results, asked whether this idea had now gone out of favour. Mr. Nicholas replied that the process was rather complicated and he did not think it was really suitable for modern methods of road construction. In general the tendency was to use harder binders rather than fluxed materials; for example the use of tar of 50-54 deg. e.v.t. was now standard practice.

Replying to **MR. J. D. MACKENZIE, A.M.I.Mun.E.**, divisional surveyor, West Sussex, Mr. Nicholas said that it was necessary to specify very carefully exactly what the contractor was supposed to do when laying base materials. To obtain proper compaction of black bases no layer should be thicker than 3 in.; the Laboratory had found it wise on a very weak sub-base to lay the first layer of black materials by hand and to use only a light roller; with subsequent layers a heavier roller was used. In this way no difficulties occurred. It was, of course, more satisfactory to use a sub-base material that would carry normal construction machinery. In reply to questions by **MR. G. W. G. WILKS, A.M.I.C.E.**, divisional surveyor, Surrey, Mr. Nicholas said that the worst conditions for wet-weather skidding were generally to be expected in the summer, especially in late summer, although in some years the lowest skidding resistance occurred in early summer, depending on the weather; it was most unlikely that it would occur between October and April. So far as the possibility of stripping of

the binder from the aggregate in black bases was concerned, there was no doubt that, where it was intended to leave a base exposed for any length of time before laying a basecourse and wearing-course, it should be surface-dressed to keep the water out. The denser base materials now recommended were unlikely to strip seriously but sealing was a good insurance.

**MR. H. BOWDLER, M.I.Mun.E.**, county surveyor, Kent, asked for the lecturer's views on the question of adhesion of tar-bound to bitumen-bound layers. Mr. Nicholas replied that many people had, with great success, for many years been laying tarmacadam basecourse and bitumen-macadam wearing-course. In recent experiments the Laboratory had successfully used rolled asphalt on a close-textured tarmacadam basecourse. There had been one or two instances where trouble had been reported; it was suspected that this was due to the soft stone in the basecourse which had under the heavy roller led to dust formation, or, more probably, to mud carried on to the basecourse by construction traffic. It was essential that the basecourse should be kept clean, good adhesion was impossible on a dusty or muddy basecourse.

**MR. A. H. KENNARD, A.M.I.Mun.E.**, deputy county surveyor, Kent, asked, if a dense tarmacadam base were specified, could not the same mixture and specification be used for the basecourse as the base? Mr. Nicholas thought that as the recommendations for the basecourse and the base were rather similar it would be possible to carry the base up to within 1 $\frac{1}{2}$  in. of the surfacing, but the increased binder content in the recommended basecourse material gave it improved load-spreading properties which were desirable near the surface of a heavily trafficked road.

#### FUEL AND POWER SHOW, 1963

The Northern Exhibition of Fuel and Power for Industry, in future to be known as the National Exhibition, is to be held again at the Queens Hall, Leeds, in the autumn of 1963. Mr. Trevor Davey, managing director of Modern Exhibition Services, Ltd., the organisers, said recently that the show was to continue biennially.

### DISTRICT RAILWAY PLATFORMS EXTENSION AT BLACKFRIARS

#### Large Beams Placed at Night

WORK is at present being carried out on the lengthening of Blackfriars Station platforms, which is one of a number on the District Railway being lengthened.

The new station extension design consists of reinforced concrete precast roof beams and columns bolted together to form a rigid portal frame resting on reinforced concrete beams supported by the existing Fleet Sewer foundations at the west end, and bored piles at the east end of the work. A reinforced concrete roof is placed on the beams and above this, the road surface.

Before commencing on the construction of the new roof and walls, the Fleet Sewer, which passes under the railway, had to be sealed from the new work to prevent flooding of the tunnel, by the construction of cut-off walls.

The new work is built round the existing tunnel and on completion the existing structure will be demolished.

A considerable portion of the work is being carried out under steel decking so as not to interfere with day traffic, which is very heavy at the approach to Blackfriars Bridge. During night occupations columns and roof beams are placed and the decking re-laid before the early day traffic commences.

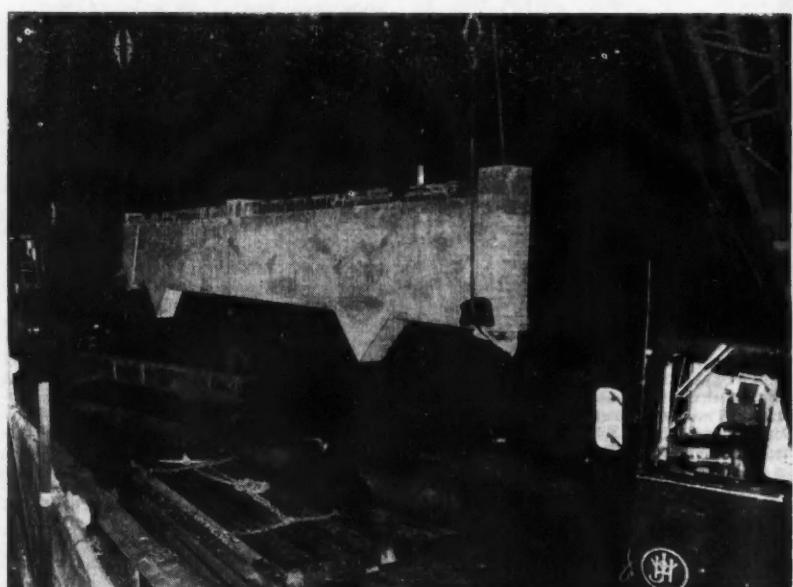
Our illustration shows one of the beams, which weighs 18½ tons, and is about 43 ft. long, being lowered on to the columns. Each column has eight reinforced bars which have to pass through holes in the

beam and are used to bolt columns and beam together.

The work is being carried out for the

London Transport Executive, who are responsible for the design and supervision, and the main contractors are Mitchell Brothers, Sons and Co., Ltd., London, S.W.1.

The sub-contractors for precast beams and columns are Costain Concrete Co., Ltd., and for the bored piles, The Cementation Co., Ltd.



A beam being placed late at night

## SAFETY IN CIVIL ENGINEERING CONTRACTING

### Federation's Booklet for Supervisors

**S**AFETY has to be got over to the men and supervisors, being in regular contact with the men, are in the best position to do it. This is the basis of the new "Supervisors' Safety Booklet," published by the Federation of Civil Engineering Contractors, with the object of helping supervisors to prevent accidents on sites.

The root cause of an accident says the booklet is that somewhere somehow, somebody has made a mistake. The basic principles of accident prevention are therefore two-fold. First, to institute safe methods of working to reduce the chance of a mistake. Second, to institute other precautions to reduce the chance of injury even if somebody does make a mistake. The booklet takes a specific example—the danger of protruding nails. Accident prevention number 1 it says is to de-nail all timber. Accident prevention measure number 2 is to have all timber neatly stacked away from walkways and to encourage men to wear safety boots.

This direct and factual approach to accident prevention is the keynote of the book. It has been based on factual reports of 5,500 accidents which occurred over a two-year period. Ninety-nine typical accidents are quoted—about the number of accidents that occur on civil engineering sites every week.

#### Basic Rules

Before dealing with the major causes of accidents in detail the booklet lists the basic things that supervisors should do on site from the safety point of view. First and foremost is "keep the site tidy." Site tidiness is stressed all the way through the book as being the foundation of safety and of a well run job. The other basic safety rules for supervisors are: Know the causes of accidents, anticipate hazards and guard against them; think before you act; never take a chance with danger; give instructions clearly and see that they are carried out; and set a good example.

#### Persons Falling

The first of the major causes of accidents dealt with in the booklet is "persons falling." This causes 22 per cent. of all accidents on civil engineering sites and nearly half of these are slips or trips which occur on the level. Site tidiness is quoted as the key factor in reducing such accidents coupled with the provision of adequate scaffolds and ladders and the erection of barriers around excavations and holes. The booklet deals in detail with the causes and means of preventing falls from scaffolds and ladders giving a useful list of common faults in scaffolding and advice on the safe use of ladders. It contains a complete sub-section on falls from plant because they are surprisingly frequent on civil engineering sites. One of the typical accidents quoted is a case where a crane driver was killed when he slipped while trying to swing himself on to his crane and fell headfirst into a concrete-bottomed trench. The appropriate safety rules include the provision of ladders from ground level to working platforms on cranes and similar plant and the prohibition of men from riding on plant unless there is a safe spare seat.

Accidents which arise from materials and objects falling, moving or being moved, constitute the second main group, such accidents account for 20 per cent. of the total and well over half of them occur on the level because men drop materials on their own feet or get their fingers pinched when materials are being moved, stacked or driven into position. Concise but full instructions about the safe stacking of materials is given in this section of the booklet and emphasis is laid on the need

to get a good grip on materials when man-handling them.

#### Plant Accidents

The third major group of accidents which accounts for 21 per cent. of the total is plant. The booklet points out that the machines used on civil engineering sites pack a terrific punch and inevitably when accidents occur the results are often serious. It quotes one overriding safety rule—position the plant and the men so that the men cannot be struck by the plant. This simple precaution, says the booklet, would prevent many serious plant accidents. One of the appendices to the booklet is devoted to rules for the safe operation of plant and another section to the safe operation of lifting appliances which includes advice on the care of lifting tackle, the proper method of slinging and crane operation.

#### Tools

The prevention of accidents caused by pneumatic or hand tools which account for 12 per cent. of the total is largely a matter of making sure that these tools are used properly, says the booklet. Most of the accidents with pneumatic tools for example, are caused by the tool striking the operator, usually his feet, because the steel slips, breaks or comes off. The booklet therefore emphasises the need for operators to position their feet so that they cannot be struck by the steel if it slips. Hand tools also cause nasty injuries. The booklet quotes an accident where a driver lost an eye when a lever lengthened with a piece of tubing slipped and struck him in the face. The booklet says that while such misuse of hand tools causes accidents the majority are due to men striking themselves or other workmen with picks, shovels, etc., or due to defective tools. It therefore urges the need for men to be positioned so that they cannot be struck by another man's pick or shovel and the need to use the right equipment for the job and to withdraw defective equipment from use.

#### Not Unimportant

The section of the booklet dealing with miscellaneous accidents which account for the remaining 25 per cent. of the total should not be construed as being unimportant. As the booklet says some very serious accidents come under this heading, namely collapse of excavations and electric shock. The section also covers protruding nails, strains and twists, burns, eye injuries, explosives and drowning. The section on collapse of excavations contains a useful guide about the support required for excavations in varying ground conditions. It also contains some diagrams showing different systems of supports.

A list of common faults in electrical apparatus is given in the section dealing with accidents caused by electricity. And the safe procedure for lifting and carrying is described in the section on strains and twists which also contains some useful diagrams on typical man-handling operations.

The first of the appendices to the booklet is a site safety check up list for use when going round the site. The second is a reproduction of form 1008 issued by the Ministry of Labour giving advice on first aid treatment, followed immediately by rules and diagrams on artificial respiration based on information supplied by the Royal Life Saving Society. Then come the appendices on the safe operation of plant and lifting appliances already referred to. The standard system of crane signals issued jointly by the Federation and the N.F.B.T.E. is reproduced and some useful tables about slings, pulley blocks, efficiency of wire rope connections and weights of various materials are given. Finally, the

book deals with fire precautions and gives a brief summary of the main safety legislation which applies to civil engineering operations. The booklet has an excellent index and also contains a list of useful addresses and a bibliography for further reference.

#### Comprehensive Guide

Altogether this booklet provides a comprehensive practical guide to safety on the site. It is in a handy pocket size and the two-colour presentation of the text with 60 illustrations and a number of excellent cartoons ensures that any supervisor will read it. It deserves to become the supervisor's "Bible" on safety. Copies are obtainable from the Federation of Civil Engineering Contractors, Romney House, Tufton Street, London, S.W.1.

(Concluded from page 206)

room, and the Hollerith machine and punch rooms have controlled humidity to preserve papers and cards in undistorted condition.

The forecasting, teleprinter, radio telecommunications, and the computer rooms are fully air conditioned. The plant for this has a capacity of 17,000 C.F.M.

#### Electrical Installation

Artificial lighting is provided to intensities from 6-25 F.C. almost entirely by fluorescent fittings with anti-glare opal plastic louvers.

Considerable under-floor ducting is provided for P.O. services and general services.

Multi-core instrument cables are provided from observation points to various laboratories and display panels.

A number of laboratories are provided with D.C. at 6-V and 24-V and with A.C. supply at 415/240-V 50 cycles, 80-V 1,500 cycles, and 200-V and 215-V at 400 cycles.

Special cables to and from Whip aerials on the roof have been installed and a television aerial to enable weather forecasts to be monitored.

#### Air and Gas Services

The laboratories are provided with town gas, compressed air, vacuum and hot and cold water services by pipework in service casings along the outer walls.

#### Icing Laboratories

Two icing laboratories have been provided giving -10 deg. C. and -40 deg. C. for testing recording equipment.

#### Lifts

There are three central passenger lifts, a goods lift of 2-ton capacity, a service hoist to kitchen, and a library stack lift. The passenger lifts are for 16 persons and are on group collective control for automatic use. These run at 300ft. per minute.

#### Staff Restaurant

The kitchen with gas-heated cooking equipment and electrical ancillaries is designed to cater for 350 main meals daily. It has a heated ceiling to prevent condensation. A snack bar has been provided for the night staff to heat food and make tea or coffee when the main kitchen is closed.

#### Designers and Contractors

The building was designed in the Chief Architect's Division of the Ministry of Works (superintending architect, Mr. H. A. Snow, A.R.I.B.A.). The mechanical and electrical engineering services were provided by the Chief Engineer's Division of the Ministry (senior engineers: Mr. V. Noble, A.M.I.Mech. E., and Mr. A. M. Palmer, B.Sc., A.M.I.H.V.E.).

The main contractors were W. E. Chivers and Sons, Ltd., of Devizes, Wiltshire.

● Talking of Safety by "Dragee" appears this week on page 240. Subsequent articles include, Soil Stabilisation Saves Costs on Construction of Lagos Road (p.241); Concrete Batching, Mixing and Pouring at Glen Canyon Dam, U.S.A. (p.243); Birmingham Disposal Works Will Handle 300 Tons of Refuse a Day (p.245); Trade and Company News (p.246).

# Current Constructional Activities

## PROJECTS • CONTRACTS • AWARDS

THIS editorial feature provides readers with a comprehensive news service covering forthcoming private and public construction work. Commencing on this page information is given concerning future projects followed by details of tenders being invited. In the third section will be found news of tenders recommended for acceptance, tenders accepted and contracts awarded. Attention is also drawn to the advertisements covering contracts and appointments appearing in the front part of the *Journal*.

### BUILDING AND DECORATING

(See also Housing Schemes)

**Barwell, Leics.**—Plans have been prepared for extensions to the Cedars Community Centre, Shilton Road, for the Cedars Community Association. Estimated cost £7,000.

**Basingstoke, Hants.**—North East Hants Area Planning Committee have granted B.C. outline planning permission for the construction of indoor swimming pool and car park at St Andrews Road.

**Becles, Suffolk.**—B.C. recommended to prepare preliminary plans for the provision of a public convenience at the rear of Woolworths, on land in the corporation's ownership.

**Beddington and Wallington, Surrey.**—B.C. recommended to approve plans prepared by Robert Atkinson and Partners, architects, 13 Manchester Square, London, W.1, for the extension of the central library.

**Bedfordshire**—M.E. to purchase land at Flitton Glebe from C.C. for the provision of training facilities for the National College of Agricultural Engineering to be erected at Silsoe, on which work is expected to commence early next year at an estimated cost of £200,000.

**Bermondsey.**—B.C. recommended to appoint F. S. Snow and Partners, consulting engineers, 144 Southwark Street, London, S.E.1, to prepare detailed plans and W. G. Edwards and A. Avery Hall, Quantity Surveyors, 75 Blackfriars Road, London, S.E.1, to prepare bills of quantities for the reconstruction of the Rotherhithe Baths.

**Bexley, Kent.**—B.C. recommended to appoint R. T. James and Partners, 6 Lower Grosvenor Place, London, S.W.1, as structural engineers for the provision of additional accommodation at Bexley Grammar School; prepare detailed plans for the erection of a boathouse and lakeside cafe at Danson Park.

**Birmingham.**—Regional Hospital Board recommended to approve in principle, schemes for bath and toilet accommodation at Edward and Wells Homes, conversion of James Home into special baby unit, sports pavilion and three blocks of outside lavatories at St. Margaret's Hospital, estimated cost £1,200, £2,000, £1,450 and £6,000, respectively; football pavilion for Rubery Hill and Hollymoor Hospitals, £2,500; conversion of general bathroom to O.T. department and modernisation of sanitary accommodation and provision of lifts in wards M1 and M2 and prefabricated building for rehabilitation centre at Rubery Hospital, £2,500, £93,500 and £6,000, respectively; reorganisation of laboratory at Hollymoor Hospital, £2,500; cool rooms for central kitchens at Highcroft Hospital, £1,000; staff social club at Monyhull Hospital, £4,000; stage 2 of conversion of ward to nursing unit at Middlefield Hall Hospital, £2,000; improvements to clinical rooms at Chelmsley Hospital, £2,100; extension of lecture room at pre-liminary training school, £1,000; provision of visitors' toilets, conversion of ward D5 and prefabricated accommodation at Dudley Road Hospital, £3,000, £7,390 and £24,000; prefabricated accommodation at the Hearing Aid Clinic, £16,000; modernisation of wards I and G at Yardley Green Hospital, £2,500 and £1,500; extension of ward 4 at West Heath Hospital, £5,750.

**Bishop Auckland, Dur.**—Atcost, Ltd., 66 Duke Street, Darlington, are to extend their factory at Bishop Auckland; The British Belting and Asbestos Co., Ltd., are planning developments on a 30 acres site at West Auckland.

**Blaydon, Dur.**—T. and W. E. Hutchinson, Ryton Hall, Ryton-on-Tyne, propose eight lock-up shops in Parliament Street; Urban

Development Co. Ltd., The Side, Newcastle upon Tyne, are to erect builders offices at Bridge Street.

**Bolton, Lancs.**—B.C. recommended to approve in principle to include in the 1962-63 programme, scheme for the erection of a hospital for old people.

**Boston, Lincs.**—Montague Burton, Ltd., Hudson Road, Leeds, 9, propose the erection of a new store on the site of the old Woolworth's in Strait Bargate.

B.C. recommended to prepare amended plans for the proposed new swimming baths. Estimated cost £48,000.

**Bromsgrove, Worcs.**—Birmingham Regional Hospital Board recommended to approve in principle, schemes for modifications to Ward G toilets, etc., visitors' toilets and consulting rooms, modernisation of staff cafeteria, modification of veranda in day patients' workshop and phase 2 of sanitary annexes to wards at All Saints' Hospital, estimated cost £1,700, £2,000, £1,200, £2,400 and £36,875, respectively; reinstatement of foul wash building at Bromsgrove General Hospital, £6,220; flat for two resident male nurses at Lea Hospital, £4,200; occupation therapy department at Barnsley Hall Hospital, £14,970.

**Burnham-on-Sea, Som.**—B.C. recommended to approve the erection of a home for about 50 people at Steart Drive. Estimated cost £73,365.

**Burton-on-Trent, Staffs.**—Birmingham Regional Hospital Board recommended to approve in principle, schemes for extensions to staff social club, demolition of clock tower and provision of storage facilities, and incinerator and building at Andressey Hospital. Estimated cost £2,000, £18,680 and £10,310, respectively.

**Burton-on-Trent, Staffs.**—B.C. have approved plans for the erection of a new Robert Sutton R.C. Secondary Modern School and caretaker's house at Bluehouse Lane, for Rev. Herbert F. Bowker. Architects for the scheme are Sandy and Norris, 134 Newport Road, Stafford.

**Bury, Lancs.**—F. Bradley, Penny Bank Chambers, Wood Street, Bolton, is the architect for erection of a new church adjoining the Seedfield Mission Church, for St. John's Parochial Church Council in association with Diocese of Manchester. Estimated cost £22,000.

**Chelmsford, Essex.**—B.C. to proceed with the preparation of detailed plans and invite tenders for the construction of public conveniences at Tower Gardens and Admirals Park.

**Chester-le-Street, Dur.**—J. M. Angus, 3 Gallowgate, Newcastle upon Tyne, is the architect for new premises at Vigo Lane, for the Barley Mow Workmen's Club.

**Colchester, Essex.**—Rose of Colchester, Ltd., Kendall Road, Colchester are seeking planning permission to extend their printing works and stores at Charles Street.

**Coventry, War.**—Birmingham Regional Hospital Board recommended to approve in principle, schemes for extension to mortuary and housing for autoclaves at Coventry and Warwickshire Hospital, estimated cost £2,500 and £4,000, respectively; mock-up ward unit at Walsgrave Hospital, £10,000; delivery suite at Gulson Hospital, £34,200.

**Croydon, Surrey.**—Bills of quantities are being prepared for the erection of showrooms, offices and workshops at 114-116 Windmill Road, for Industrial Rentals Ltd. Royce Stephenson and Tasker, 3 Field Court, Gray's Inn, London, W.C.1, are the architects and Frank N. Falkner and Partners, 39 Bedford Square, London, W.C.1, are the quantity surveyors for the scheme. Estimated cost £20,000.

**Deal, Kent.**—B.C. recommended to apply to Ministry for grant aid and instruct Martindale and Oldacres, architects, 27 Victoria Road, Deal, to prepare plans for improvements at Mayers Road estate.

**Doncaster, Yorks.**—Gillinson and Barnett, 8 Queen Square, Leeds, 2, are the architects, John S. Tooke and Partners, 87 Eccleston Square, London, S.W.1, structural engineers, and Cecil F. Baker and Partners, 20 Lowndes Street, London, S.W.1. The quantity surveyors for erection of new self-service store in the High Street for MacFisherries, Ltd. Contract not yet placed.

**Dudley, Worcs.**—Birmingham Regional Hospital Board recommended to approve in

principle, scheme for visitors' toilets, etc., at Burton Road Hospital. Estimated cost £3,000.

**Durham.**—C.C. recommended, subject to Home Office approval, to approve the adaptation of Elvet Station to provide two adult courts, a juvenile court, subsidiary rooms, and office accommodation for the County justices. Estimated cost £48,500.

**Erith, Kent.**—B.C. have approved plans for the redevelopment of the town centre, including approximately 100 shops with flats, maisonettes, office blocks, etc., for Park Investments, Ltd. Richard Seifert and Partners, 34 Red Lion Square, London, W.C.1, are the architects for the scheme. Estimated cost £6m.

**Exeter.**—City Council recommended to negotiate tender with J. Thorn and Sons, Ltd., for the fabrication and assembly of timber huts to provide accommodation for traders at Blackboy Road roundabout, stage VII. Estimated cost £6,000.

**Folkestone, Kent.**—G. H. Ashenden, consulting engineer and surveyor, 1 Effingham Street, Ramsgate, is preparing bills of quantities for the first stage of the erection of a factory at Tile Kiln Lane, north of Biggins Wood Road, for F. W. Maul and Son, Ltd. Work is expected to commence early next year. Estimated cost £20,000.

**Harrogate, Yorks.**—B.C. recommended to approve scheme for a new and enlarged bar at the Royal Hall. Estimated cost £4,000.

**Hereford.**—Birmingham Regional Hospital Board recommended to approve in principle, schemes for plaster theatres, ENT unit and reconstruction of boundary wall at the General Hospital. Estimated cost £6,000, £16,800 and £4,000, respectively.

**Heston and Isleworth, Middx.**—B.C. recommended to approve scheme for the erection of an old people's retreat at Inwood Park, Hounslow. Estimated cost £3,000.

**Heston and Isleworth, Middx.**—B.C. have approved outline planning application for the erection of a seven-storey office block on land at the junction of London Road and Worton Way, Isleworth, for B. N. White Spunner, Ltd., c/o Raymond Spratley and Partners, architects, 9 Hertford Street, Park Lane, London, W.1.

**Heywood, Lancs.**—B.C. recommended to approve in principle to lease land in Mount Street for the erection of an engineering works, for Heywood Precision Engineering Co., Ltd., Rock Street, Heywood.

**Horbury, Yorks.**—Enthoven and Moek, 5 Raymond Buildings, Grays Inn, London, W.C.1, are the architects and F. J. Samuely and Partners, 231 and 233 Gower Street, London, N.W.1, consulting engineers, for erection of an office block at Benton Hill, for Richard Sutcliffe, Ltd.

**Horley, Yorks.**—B.C. recommended to approve plans for industrial development at Bruntcliffe Lane, for Batley Grammar School Governors, 22 Carlinghow Hill, Batley.

**Hornsey, Middx.**—B.C. recommended to proceed with scheme for the erection of a new central library.

**Holighton-le-Spring, Dur.**—The Pearl Assurance Co., Ltd., are planning the rebuilding of premises at Durham Road. Outline plans have been prepared by W. S. H. Julian, 252 High Holborn, London, W.C.1.

**Iford, Essex.**—M.E. have approved Phase I of the remodelling of Ilford County High School for Boys, for B.C. Estimated cost £60,000.

B.C. recommended to invite tenders in due course for erection of public convenience at Barkingside Recreation Ground. Estimated cost £3,000.

**Irlingham, Northants.**—Ministry have approved U.D.C. scheme for the purchase of the Town Cinema and adaptation as a community centre.

**Jarrow, Dur.**—J. M. Angus, 3 Gallowgate, Newcastle upon Tyne, is the architect for new premises for the Jarrow Ex-Servicemen's Club and Institute, Ltd.

Plans by the Borough Engineer for alterations and additions to the Corporation Bath, Walter Street, have been approved.

**Leominster, Herefs.**—Birmingham Regional Hospital Board recommended to approve in principle, scheme for out-patients' facilities at the Cottage Hospital. Estimated cost £11,300.

**Lichfield, Staffs.**—Birmingham Regional Hospital Board recommended to approve in principle, schemes for covered way to E.M.S.

huts, phase 2, and staff social club at St. Matthew's Hospital, Burntwood. Estimated cost £2,000 and £1,500, respectively; conversion of maternity space for geriatrics at St. Michael's Hospital, £5,000.

**London.**—Gunton and Gunton, Empire House, St. Martin's Le Grand, London, E.C.1, are the architects, Franklin and Andrews, 173 Fleet Street, London, E.C.4, are quantity surveyors and Hurst, Peirce and Malcolm, Artillery House, Artillery Row, London, S.W.1, are the consulting engineers for the development of the Winchester House site, E.C.2, for Cheapside Land Development Co., Ltd.

**Ludlow, Salop.**—Birmingham Regional Hospital Board recommended to approve in principle, scheme for a mortuary at Ludlow Hospital. Estimated cost £1,000.

**Lyme Regis, Dorset.**—B.C. recommended to proceed with the preparation of detailed plans and bills of quantities for phase II of the Marine Theatre development.

**Manchester.**—City Council recommended to approve planning permission for new library, cloakroom and classrooms (Phase 1) at Manchester High School for Girls, Wilmslow Road and Grangethorpe Road.

Planning approval granted, subject to Ministry approval, for erection of a hotel at Poplar Grove Farm adjoining City boundary and north of Ringway Road, Heyhead, for Airport Committee; cold stores, administration offices, lairage and reception pens at City Abattoir, Cemetery Road, Briscoe Lane and Ten acres Lane, Newton Heath; aged persons' home "Weylands," Hall Lane and Porlock Road, Baguley; "The Coppice," Wythenshawe Road, Northenden; and "Kirkley" Kirkmanshulme Lane and Albert Grove, Longsight. Housing Committee to submit for planning approval proposals for the erection by Direct Labour of six shops at Handforth.

City Council recommended to apply for sanction to borrow £1,450 for extensions and alterations to St. Vincent's R.C. School, Higher Openshaw; £5,787 for erection and furnishing of family group home, Nuthurst Road, Moston; £59,778 for hostel for the mentally disordered, Brougham Street, West Gorton and £61,928 for one at Plymouth Grove, Longsight.

**Mansfield, Notts.**—B.C. recommended to approve outline application for industrial development at Sheepbridge Lane, for Johnsons of Mansfield Ltd., Reed Mill, Mansfield.

**Nelson, Lancs.**—B.C. are to prepare bills of quantities and invite tenders in due course, for the erection of public conveniences at Algar Street.

**Newcastle-under-Lyme, Staffs.**—Birmingham Regional Hospital Board recommended to approve in principle, scheme for upgrading of wards at Lyme Wood Hospital. Estimated cost £2,000.

**Newcastle upon Tyne.**—Associated Portland Cement Manufacturers, Tothill Street, London, S.W.1, are to erect storage and distribution depot at Marleen Avenue.

Planning authorities are considering a £250,000 scheme for the erection of an eight-storey block containing offices and shops at the corner of Gallowgate and Percy Street, Newcastle, for Percy Street Investments, Ltd. (a subsidiary of the Metropolitan Estate and Property Corporation, London). The architects are L. J. Couves and Partners, Grainger Chambers, Hood Street, Newcastle upon Tyne.

**Newport, Salop.**—Birmingham Regional Hospital Board recommended to approve in principle, schemes for sterilising and anaesthetic room to theatres at the Cottage Hospital. Estimated cost £3,000.

**Nottingham.**—J. Fletcher Watson, 3 Old Barrack Yard, Knightsbridge, London, S.W.1, is the architect and Messrs. Gleeds, 7 Clinton Terrace, Derby Road, Nottingham, are the quantity surveyors for proposed new hall of residence to be erected at Beeston Lane, for University of Nottingham. Work is expected to commence in 1963.

**Oswestry, Salop.**—Birmingham Regional Hospital Board recommended to approve in principle, schemes for improvements to maternity unit and nursery at Oswestry Hospital, estimated cost £6,000; improvements to resident medical staff quarters and Montgomery ward and additional ancillary accommodation at Robert Jones and Agnes Hunt Hospital, £2,000, £2,500 and £39,500, respectively.

**Oxford.**—City Council recommended to approve plans, subject to conditions, for erection of new building for hostel and canteen at Cowley Road bus depot, for City of Oxford Motor Services, Ltd.

**Padstow, Corn.**—Wescol Construction Co. Ltd., Lunbrook Mills, Northowram, Halifax, are to establish a holiday camp at the former Royal Navy air station at St. Merryn.

**Petworth, Sussex.**—R.D.C. have approved plans for the demolition of building at Wisborough Green and erection on site of factory, for Carter Bros. (Billinghurst), Ltd., Reliance Works, Wisborough Green, Billinghurst.

**Plymouth.**—City Council have approved in principle scheme for the construction of a bowling alley at Mayflower Street, for D. Maxwell. Architects for the scheme are Edward Narracott and Partner, 36 Looe Street, Plymouth.

**Plymouth.**—City Council recommended to apply for sanction to borrow £53,503 for the conversion of the ground floor workshops into laboratories at the Plymouth and Devonport Technical College.

**Prudhoe, Northumb.**—U.D.C. have prepared a scheme for an industrial estate near the works of Imperial Chemical Industries, Ltd. John T. Bell and Sons, Ltd., New Market Street, Newcastle upon Tyne, are to erect hotel at Eastwood Road, West Wylam.

**Reading, Berks.**—Chaplin and Burgoine, 4 Cathedral Close, Norwich, are the architects for the development of the Palace Theatre site, Cheapside, for the Cranleigh Group, Ltd.

**Rochester, Kent.**—City Council have approved the construction of a covered swimming pool as part of the Esplanade development scheme. Estimated cost £200,000.

**Ross-on-Wye, Heref.**—Birmingham Regional Hospital Board recommended to approve in principle, scheme for alterations to provide geriatric unit at Alton Street Hospital. Estimated cost £3,000.

**Rugby, War.**—Birmingham Regional Hospital Board recommended to approve in principle, scheme for ward improvements at the Hospital of St. Cross. Estimated cost £2,000.

**St. Albans, Herts.**—C.C. propose the erection of 42 bedrooms, a warden's flat and two classrooms at the Herts. Institute of Agriculture, Oaklands. Estimated cost £60,238.

**St. Asaph, Flint.**—R.D.C. have approved plans for the erection of a factory at Glascoed Road, for the Industrial Estates Management Corporation for Wales, Pontypridd (to be occupied by Ega Electric Ltd.).

**St. Pancras.**—L.C.C. planning approval is being sought for the erection of shops, showrooms and offices at 119-135 Euston Road. R. Seifert and Partners, 34 Red Lion Square, London, W.C.1, are the architects for the scheme.

**Salford, Lancs.**—City Council recommended to apply for sanction to borrow £57,976 for erection of halls of residence at the Royal College of Advanced Technology.

**Seaton Valley, Northumb.**—The local St. John Ambulance Brigade (B. L. Miller, treasurer, 19 Belford Avenue, Shiremoor) are to purchase land at Shiremoor for new headquarters. An architect has not yet been appointed.

**Sheffield.**—City Council recommended to lease 3,170 sq. yd. of land situate at Bank Street, Hartshead and Meetinghouse Lane to Cussins Contractors, Ltd., Newcastle upon Tyne, as a site for the erection of a multi-storey car park to accommodate approximately 500 vehicles, together with ancillary development comprising offices and shops.

City Engineer to be authorised to construct a cantilever vehicle shelter at Olive Grove Depot, estimated cost £2,700.

City Council recommended to appoint Cyril Sweet and Partners, 37 Bedford Row, London, W.C.1, quantity surveyors and Ove Arup and Partners, 13 Fitzroy Street, London, W.1, structural engineers, for demolition and site investigation of the Sheaf Market.

**Shrewsbury, Salop.**—Birmingham Regional Hospital Board recommended to approve in principle, schemes for single bed maternity wards, additional office accommodation for superintendent engineer, connecting link between wards 1 and 3 (children's unit) and additional X-ray room at Copthorne Hospital. Estimated cost £1,000, £3,000, £1,000 and £2,600 respectively; improvements to operating theatre suite at the Eye, Ear and Throat Hospital, £2,640.

**Spennymoor, Dur.**—C.C. recommended to approve the erection of administrative offices to house the various County services in the town.

**Southport, Lancs.**—Borough architect is to proceed with the preparation of sketch plans for development of the West Hill site.

**South Shields, Dur.**—Plans approved for the erection of club premises at Simonside Hall, Newcastle Road, for the South Shields A.F.C. supporters club; Waring and Netts, Lansdowne Terrace, Gosforth, are the architects for shop extensions for Grahams, Ltd., Frederick Street; a selected number of firms have been invited by the B.C. to tender for the erection of a hostel at South Shields Marine and Technical College (the architects are Meade, Taylor and Wilson, 33 Lansdowne Road, London, W.1); preliminary draft plans have been prepared for the proposed Whiteleas County Secondary School (the architect

is J. Smeds, 56a Camden Street, North Shields).

**Stafford.**—Birmingham Regional Hospital Board recommended to approve in principle, scheme for nurses' dining room at Staffordshire General Infirmary. Estimated cost £9,770.

**Stockton-on-Tees, Dur.**—F. H. Swainston, 28 Albert Road, Middlesbrough prepared plans for extending the Mercury Garage, Yarm Road, Eaglescliffe.

**Stoke-on-Trent, Staffs.**—Birmingham Regional Hospital Board recommended to approve in principle, scheme for improvements to nurses' home at Harthill Hospital. Estimated cost £1,000; upgrading of sluicing and toilet facilities at Limes Maternity Hospital and kitchen at Stanfield Hospital, £1,000 each; improvements to operating theatre at City General Hospital, £30,800.

**Stourbridge, Worcs.**—Birmingham Regional Hospital Board recommended to approve in principle, scheme for conversion of isolation block at Mary Stevens Hospital. Estimated cost £2,000.

**Stratford-upon-Avon, War.**—Birmingham Regional Hospital Board recommended to approve in principle, scheme for interim improvements to operating theatre at the Hospital. Estimated cost £5,000.

**Sunderland, Dur.**—E. G. Crofts, 49 Grange Road, Darlington, is the architect for club premises at the corner of Bayswater Avenue and Baker Street, Town End Farm Estate, for Town End Farm Working Men's Club, plans also prepared by Newick and Blackwell, 58 John Street, for new premises at Old Mill Road, Southwick, for the Southwick Conservative Club.

**Thurrock, Essex.**—Ministry have approved scheme for the proposed covered swimming pool and public hall to be erected at King George's Field, Blackshots, Grays, for U.D.C. Estimated cost £501,990.

**Torquay, Devon.**—Planning approval is being sought for the erection of a bowling alley in Higher Union Street, for D. Maxwell. Architects for the scheme are Edward Narracott and Partner, 48 Torwood Street, Torquay. Estimated cost £100,000.

**Wallasey, Cheshire.**—B.C. have approved in principle plans for the construction of a shopping precinct at Liscard, for Metrovial Properties Ltd., 15a Hay Hill, London, W.1. Estimated cost £3m.

**Walsall, Staffs.**—Birmingham Regional Hospital Board recommended to approve in principle, schemes for toilet accommodation at the General Hospital and annexes to medical residence at Manor Hospital. Estimated cost £2,000 and £4,000 respectively.

**Walthamstow, Essex.**—B.C. recommended to approve scheme for the erection of two garages and the formation of a public garden at the junction of Browns Road and Hoe Street, two garages on the site of 15 Byron Road and two garages at the rear of 46 Carrbrook Road.

**Walton and Weybridge, Surrey.**—U.D.C. recommended to instruct Ove Arup and Partners, consulting engineers, 13 Fitzroy Street, London, W.1, to prepare detailed plans for the construction of a swimming pool. Estimated cost £170,000.

**Wandsworth.**—L.C.C. planning approval is being sought for the erection of an office block at 207a-9 Balham High Road. Wilson, Mason and Partners, 53 Victoria Street, London, S.W.1, are the consulting engineers for the scheme.

**Warwick.**—Birmingham Regional Hospital Board recommended to approve in principle, schemes for operating theatre extensions, modernisation of children's unit and extension to medical staff quarters at Warwick Hospital. Estimated cost £5,000, £18,000 and £1,500, respectively.

**Wednesday, Staffs.**—Birmingham Regional Hospital Board recommended to approve in principle, schemes for cloakroom accommodation and sanitary annexes to ward 1 at Moxley Hospital. Estimated cost £3,000 and £15,150, respectively.

**Welshpool, Monts.**—Welsh Regional Hospital Board have approved scheme for improvements to maternity departments at Welshpool Hospital. Estimated cost £2,000.

**West Bromwich, Staffs.**—Birmingham Regional Hospital Board recommended to approve in principle, schemes for additional staff toilets at Hallam Hospital and treatment room in clinic at Heath Lane Hospital. Estimated cost £1,250 and £1,500, respectively.

**West Hartlepool, Dur.**—L. Auton, Regent Buildings, York Road, has been appointed architect by the E.C. for a proposed youth centre; Cairns and Byles, 8 Osborne Road, Newcastle upon Tyne, and Elliott and Darcy, 2 Milton Road West Hartlepool, have been appointed consulting engineers and quantity surveyors, respectively, for a proposed playing field, tennis courts, and pavilion in Catcote Road. The architect is L. Auton, Regent Buildings, York Road, and working drawings are to be prepared.

**Whitchurch, Salop.** — Birmingham Regional Hospital Board recommended to approve in principle, scheme for reorganisation of kitchens and alterations to balconies at Deer-moss Hospital. Estimated cost £18,600.

**Whitley Bay, Northumb.** — Outline plans have been prepared for new Y.M.C.A. premises at the corner of Marine Avenue and Park View. The architects are Pascal J. Stienlet and Son, 4 Queen Square, Newcastle upon Tyne. Estimated cost £60,000.

Outline plans have been approved for garage/showrooms, and filling station at Hillheads Road, for H. S. Botham, 4 Monkseaton Drive, Whitley Bay.

**Wolverhampton, Staffs.** — Birmingham Regional Hospital Board recommended to approve in principle, schemes for provision of laboratory extension, office for matron and staff, upgrading wards 17, 18 and 19 and accommodation for day cases (orthopaedic and surgical) at New Cross Hospital, estimated cost £11,416, £4,868, £11,500 and £3,500, respectively; experimental unit for intensive care nursing at the Royal Hospital, £4,000.

**Worcester.** — Birmingham Regional Hospital Board recommended to approve in principle, schemes for w.c.s in patients' garden at Powick Hospital, estimated cost £1,000; transfer of wards from Royal Infirmary, phase I and 2, extension to group stores and anaesthetic room at Ronkswood Hospital, £9,000, £2,500 and £2,400, respectively.

**Worthing, Sussex.** — B.C. recommended to approve, subject to conditions, plans for the erection of Catholic School as extension to Convent, at 62-66 Gravewick Road, and Convent of Our Lady of Sion, Crescent Road, for Rev. Mother Superior, Convent of Our Lady of Sion, H. Bingham Towner, Hooke Hall, Uckfield, is the architect for the scheme.

#### ELECTRICAL

**Birmingham.** — Regional Hospital Board recommended to approve in principle, schemes for a lift at Highfield Hospital, estimated cost £10,000; service lift for central kitchens at Higherthorpe Hospital, £2,500; upgrading of electrical services in six wards and lifts to wards 9 and 13 at Little Bromwich Hospital, £5,000 and £15,350, respectively.

**Coventry.** — Birmingham Regional Hospital Board recommended to approve in principle, scheme for the reorganisation of electrical distribution system (stage 1) at Gulson Hospital. Estimated cost £6,000.

**Shrewsbury, Salop.** — Birmingham Regional Hospital Board recommended to approve in principle, schemes for power main distribution to wards at Copthorne Hospital, estimated cost £5,000; electrical distribution at Cross Houses Hospital, £2,000.

**Surrey.** — C.C. recommended to approve the provision of traffic lighting on the Leatherhead and Mickleham By-pass Roads (A.24) at the Epsom Road, Givens Grove and Burford Bridge roundabouts. Estimated cost £2,080.

#### GAS AND WATER SUPPLY

**Beverley, Yorks.** — B.C. recommended to apply for sanction to borrow £2,500 for the provision of new water mains and connections.

**Chepstow, Mon.** — Newport and South Monmouthshire Water Board have approved scheme for improvements to the towns water supply by abstracting about 300,000 gallons a day from the Angidy Brook, which joins the Wye at Tintern. Estimated cost £88,961.

**Nottingham.** — City Council recommended to apply for sanction to borrow £87,500 for the construction of an additional reservoir at Annesley Woods.

**St. Ives, Hunts.** — Chesterton and St. Ives Joint Water Board have approved in principle scheme for tapping a trunk main running from Blunisham to Woodhurst at Pitney, and running a main across country to St. Ives. Estimated cost £25,000.

**West Sussex.** — North West Sussex Water Board have applied for sanction to borrow £484,630 for the River Rother extension scheme at Hardham which was planned to increase abstraction from the Rother from four million gallons to six million gallons a day.

**Worthing, Sussex.** — B.C. recommended to invite tenders for permanent works at Stanhope Lodge Pumping Station.

#### HARBOURS, PIERS AND SEA DEFENCE WORKS

**Tynemouth, Northumb.** — B.C. have been authorised by the Ministry to obtain tenders for the construction of a new sea wall at Cullercoats.

#### HEATING AND VENTILATING

**Bexley, Kent.** — B.C. recommended to appoint W. T. Gillam, of J. Stinton Jones and Partners, 21 Gloucester Place, London, W.1, as consulting engineer for the mechanical and electrical

services for the provision of additional accommodation at Bexley Grammar School.

**Birmingham.** — Regional Hospital Board recommended to approve in principle, scheme for enlarging main heating duct at Selly Oak Hospital. Estimated cost £3,200.

**Durham.** — C.C. have appointed Cairns and Byles, 8 Osbourne Road, Newcastle upon Tyne, consulting engineers for heating and electrical work at Annfield Plain/Leadgate Grammar Technical School.

**Hereford.** — Birmingham Regional Hospital Board recommended to approve in principle, scheme for improvements to engineering services at Burghill Hospital. Estimated cost £5,500.

**Redditch, Warks.** — Birmingham Regional Hospital Board recommended to approve in principle, scheme for boiler plant alterations at Smallwood Hospital. Estimated cost £2,000.

**Stone-on-Trent, Staffs.** — Birmingham Regional Hospital Board recommended to approve in principle, scheme for additional steam main to operating theatre at City General Hospital. Estimated cost £3,000.

**Stratford-on-Avon, War.** — Birmingham Regional Hospital Board recommended to approve in principle, scheme for operating theatre ventilation at the Hospital. Estimated cost £7,000.

**Warwick.** — Birmingham Regional Hospital Board recommended to approve in principle, scheme for installation of DHWS mains and new calorifiers, pumps and storage vessels for renewal of engineering services (phase 1) at Central Hospital. Estimated cost £27,000.

**Worcester.** — Birmingham Regional Hospital Board recommended to approve in principle, schemes for heating to wards and boiler plant modifications, grit prevention at Powick Hospital. Estimated cost £29,500 and £14,000, respectively.

#### HOUSING SCHEMES

**Aylesbury, Bucks.** — R.D.C. propose the erection of two bungalows and six houses at The Firs, Brill.

**Bexley, Kent.** — B.C. recommended to appoint Brick Flooring Constructions, Ltd., Surbiton Crescent, Kingston-upon-Thames, as consultants for the reinforced concrete frame and C. John Mann and Sons and Yeoman and Edwards, quantity surveyors, 25 Bedford Row, London, W.C.1, to prepare bills of quantities for the five-storey block of flats at East Wickham estate redevelopment stage 3.

**Ceiriog, Denbighs.** — R.D.C. to proceed with the erection of old people's houses at Stent, Llanidloes.

**Chatham, Kent.** — B.C. recommended to prepare plans and invite tenders for the erection of seven old people's bungalows at the junction of Speedwell Avenue and Yarrow Road.

**B.C.** recommended to approve outline plans for the construction of four police houses with garages adjacent to 181 Churchill Avenue, for C.C.

Town Planning Committee have approved, subject to conditions, plans for the demolition of 27-35 New Road and erection on site of an office block for the Northern Assurance Co., Ltd. Peter Ednie and Partners, 4 Gray's Inn Square, London, W.C.1, are the architects for the scheme.

**Chester-le-Street, Dur.** — A. McCullough, Ltd., 46 High Street West, Gateshead, are planning 172 houses at Garden House Farm.

**Cockermouth, Cumb.** — U.D.C. have approved plans for the erection of 20 old people's flats and 64 other flats and maisonettes in the Goce District.

**Cotgrave, Notts.** — Application for planning permission is being made by the Coal Industry Housing Association to C.C. for the erection of a further 150 houses on land to the South of Colston Gate.

**Dover, Kent.** — R.D.C. to include the erection of four old people's dwellings at Capel-le-Ferne in the 1962 housing programme.

**East Kesteven, Lincs.** — R.D.C. have no objections to scheme for the erection of 72 married quarters at R.A.F. Cranwell, for Air Ministry.

**Eton, Bucks.** — R.D.C. are seeking planning permission to build a terrace of six flats and two garages at the corner of Vine Road and Gerrards Cross Road, Stoke Poges.

**Eton, Bucks.** — U.D.C. are to submit to C.C. for approval, outline planning application for residential development at Eton Wick Road, Eton Wick, between existing development at Haywards Mead and the eastern boundary of the allotments.

**Heston and Isleworth, Middx.** — B.C. have approved, subject to conditions, plans for the erection of 20 maisonettes and nine garages,

etc., on land behind 212-220 Bath Road, Hounslow, for Federated Homes, Ltd., of East Street, Epsom, Surrey.

**Lexden and Winstree, Essex.** — R.D.C. to submit to Ministry for approval, schemes for the erection of 127 dwellings at Marks Tey, Eight Ash Green and Tiptree and 12 old peoples' dwellings at Stanway, during 1962.

**Lyme Regis, Dorset.** — B.C. recommended to approve, subject to conditions, plans for the erection of 23 houses adjacent to Marine Parade and use of land at Cliff House for residential purposes, for E. J. Keen, c/o A. F. Murray, architect, 50 Purley Bury Avenue, Purley, Surrey.

**Manchester.** — City Council recommended to invite tenders from selected contractors for reinforced concrete framework and foundations for proposed multi-storey block at Handforth (contract 384). General contractors' work to be carried out by the Direct Works Department.

Planning approval granted for the erection of three twelve-storey blocks of flats comprising 102 two-bedroom, 36 one-bedroom, 36 bed-sitters and three laundries, Hollyhedge Roundabout, Wythenshawe; thirteen-storey block of flats and four aged persons' bungalows, Fairbourne Road, Levenshulme and 57 houses, 142 maisonettes, 96 flats, 24 aged persons' dwellings, 12 shops and flats and three laundries (phase 2), site bounded by Bradford Road, Ridgeway Street and Holland Street, Ancoats.

**Mansfield, Notts.** — B.C. recommended to approve the erection of 50 aged persons' bungalows and 24 flats during 1962.

**Newcastle upon Tyne.** — George Wimpey and Co. Ltd., Orchard House, Fenwick Terrace, Newcastle upon Tyne propose multi-storey dwellings at Oakwood, near Westgate Road.

**Newton Abbot, Devon.** — R.D.C. to apply to Ministry for permission to erect 50 houses for slum clearance purposes during 1962.

**Plymouth.** — City Council recommended to approve, subject to conditions, plans for the erection of 96 married quarters, including flats at Granby Barracks, Fore Street, Devonport, for War Department.

**Rothbury, Northumb.** — R. Carse and Son, Oldgate, Morpeth, propose 14 detached houses at Whittingham. The architects are Reavell and Cahill, Lloyd's Bank Chambers, Alnwick.

**Sedgefield, Dur.** — Bainbridge and Son, 44 High Row, Darlington prepared layout scheme for 150 houses at Spring Lane.

**Sunderland, Dur.** — B.C. to erect 12 flats in Mowbray Road, propose to build 156 maisonettes in the Parade area, and 545 two-storey dwellings on an extension to the Town End Estate.

**Tunbridge Wells, Kent.** — B.C. recommended to negotiate a tender with William Ellis (Etchingham) Ltd., High Street, Etchingham, Sussex, for the erection of 55 flats at Sherwood estate, contract 22.

**Wallingford, Berks.** — B.C. to submit to Ministry and C.C. for approval, plans prepared by T. Langton Foster, architect, 72 Wantage Road, Wallingford, for the erection of a 24-unit housing development, mainly for old people, at Church Lane and Goldsmith's Lane.

**Walthamstow, Essex.** — B.C. recommended to approve scheme for the development of site at rear of Selwyn Avenue by the erection of 38 houses, nine bungalows, 48 flats in 12 storeys, and 132 maisonettes, together with 228 garages, and the reservation for temporary allotments of an area at the western end of the site.

**Walton and Weybridge, Surrey.** — U.D.C. recommended to inform Ministry that they hope to invite tenders during 1962 for the erection of 60 dwellings.

**Whitley Bay, Northumb.** — R. F. Hall, architect, 41 Deepdale Road, Cullercoats, has prepared plans for three-storey blocks of flats at Kensington Gardens.

**Woolwich.** — B.C. recommended to approve in principle scheme prepared by Norman and Dawbarn, architects, 243 Stockwell Road, London, S.W.9, for the erection of a 14-storey block of 52 flats at The Oaks, Burrage Road, appoint Norman and Dawbarn as consulting engineers for the structural frame and foundations for the erection of a 12-storey block of 45 flats at Well Hall Road, Eltham.

**Worthing, Sussex.** — B.C. recommended to approve, subject to conditions, outline application submitted by A. C. Draycott, 8 South Street, Lancing, for the erection of 24 flats and 24 garages at Singleton Crescent between Eastergate Close and Westergate Close, for Gorham (Contractors) Ltd.

#### PLAYING FIELDS, PARKS, ETC.

**Chatham, Kent.** — B.C. recommended to prepare plans for the layout of the Weeds Wood and Davis estate children's play-grounds.

**Leeds.** — City Council recommended to approve scheme submitted by the City

Architect for landscaping of Appleton Way on the Ebor Gardens estate. Estimated cost £5,050.

**Manchester.**—City Council recommended to apply for sanction to borrow £5,345 for site and layout of playing fields at Fallowfield C. of E. Technical High School for Girls.

**Mansfield, Notts.**—B.C. recommended to approve scheme for the provision of a Cycle Track for the holding of Cycling proficiency Tests on the land at the junction of Abbott Road and Brick Kiln Lane. Estimated cost £2,800.

**Salford, Lancs.**—City Council recommended to apply for sanction to borrow £1,050 for provision of a children's playground at Clement Attlee House.

**Southend-on-Sea, Essex.**—B.C. recommended to approve layout for proposed children's playground at Delaware Road. Estimated cost £1,486.

**Stoke-on-Trent, Staffs.**—Birmingham Regional Hospital Board recommended to approve in principle, scheme for stage 2 of sports field at Stallington Hall Hospital. Estimated cost £2,000.

**Weymouth, Dorset.**—B.C. recommended to invite tenders from selected contractors for Phase I of the redevelopment of the Marsh comprising running track, terracing, fencing, temporary surfacing of the proposed car park and access road, provision of footpath from Chickrell Road to the Sports Ground and layout of two senior soccer pitches and one junior soccer pitch.

#### RIVER AND FLOOD PREVENTION WORKS

**Chelmsford, Essex.**—R.D.C. have approved scheme for the relief of sewage and surface water flooding in Ingatesstone village during times of storm. Estimated cost £22,000.

**Harwich, Essex.**—B.C. recommended to apply for sanction to borrow £7,300 for improvements to main drainage of the borough. John Taylor and Sons, Artillery House, Artillery Row, London, S.W.1, are the consulting Engineers for the scheme.

**Newport, Mon.**—Usk River Board are seeking permission to carry out land drainage scheme to relieve flooding at the Spencer steelworks site at Llanwern. Estimated cost £125,000.

**Surrey, Surbiton.**—C.C. are preparing plans for the improvement of tributary one which joins Hogsmill River at Berrylands, in order that work may be commenced during the ensuing financial year.

**Surrey, Surrey.**—C.C. are preparing contract documents for the remainder of Phase III (Chuters Mill to Connolly's Mill, Wimbledon) and for the first section of the final Phase IV (Phipps Bridge Road to the Eagle Leather Works, Mitcham) of the River Wandle improvement scheme. Estimated cost £140,000.

#### ROADS, BRIDGES AND SITE WORKS

**Bagshot, Surrey.**—C.C. recommended to approve plans for the making-up of Macdonald Road, sections 1 and 2, Lightwater. Estimated cost £26,600 and £7,850 respectively.

**Bedlington and Wellington, Surrey.**—B.C. recommended to proceed with the first stage of improvement of the footways at Butler Hill estate. Estimated cost £1,580.

**Bermondsey.**—B.C. recommended to approve scheme for the widening of the carriageway and the reconstruction of the road in Tanner Street between Tower Bridge Road and Bermondsey Street. Estimated cost £8,467.

**Bolton, Lancs.**—B.C. recommended to approve, subject to Ministry approval, scheme for the layout of land at Entwistle Street for about 60 private garages.

B.C. recommended to approve in principle plans for the construction of an inner ring road between Orlando Street and Kay Street; include in the 1962-63 programme, scheme for the erection of a small triangular island at the junction of New Church Road/Chorley Old Road.

**Bromley, Kent.**—B.C. recommended to invite tenders from selected contractors for the resurfacing of road A.21 from Turpington Lane to the borough boundary and for the construction of piled foundations for the provision of a footbridge alongside Ivy Bridge.

**Chester.**—City Council recommended to approve plans for the widening and improvement of Union Street and Grosvenor Park Road.

**Chichester, Sussex.**—City Council recommended to invite tenders from selected contractors for the construction of roads to serve development at Spitalfield Lane.

**Dorking and Horley, Surrey.**—C.C. Recommended to approve plans for the making-up of Michael Crescent, Upfield (Section 2), The Crescent (Section 1), and The Drive, Horley. Estimated cost £2,868, £4,882, £9,717 and £5,473 respectively.

**Esher, Surrey.**—C.C. recommended to approve, subject to M.T. approval, scheme for the improvement of the junction of the Hampton Court-Esher Road (A.309) and Weston Green Road and Alma Road, Thames Ditton. Estimated cost £18,000.

**Guildford, Surrey.**—M.T. have requested C.C. to undertake scheme for the improvement of the junction of the London-Plymouth Trunk Road (A.3) with the Newlands Corner-Woking Road (A.247), at Send. Estimated cost £55,000.

**Heywood, Lancs.**—B.C. recommended to prepare a scheme and estimated cost for the improvement of Bury Old Road.

**Leeds.**—City Council recommended to approve the construction of Green Lane, Cookridge, estimated cost £1,400; to apply for sanction to borrow £7,520 for widening of Green Road, Meanwood, between Stonegate Road and Greenview; M.T. have made a grant of £4,538 towards the lowering of carriageway in Whitehall Road under the railway bridge near Wood Lane. Estimated at £7,750.

City Council recommended to apply for sanction to borrow £29,100 for site preparation work at Meynell Street for proposed erection of a further two ten-storey blocks of flats; £22,460 for site preparation works and construction of access roads at Beckett Park and £58,800 for siteworks and construction of roads and sewers on the Belle Isle estate.

**Liverpool.**—City Council recommended to apply for sanction to borrow £6,519 for reconstruction of carriageway and footways in Harthill Road (Allerton Road to Calderstones Road).

**Manchester.**—City Council recommended to apply for sanction to borrow £16,730, for Gorton cemetery extension, stage 2; £15,600 for roads and sewers for Municipal housing development, Ferndown Road, Brooklands; and £42,800 for Collyhurst Street redevelopment area.

**Morley, Yorks.**—B.C. recommended to apply for sanction to borrow £5,220 for the surfacing of the street works at Nepshaw Lane estate.

**Newcastle upon Tyne.**—City Council recommended, subject to M.T. approval, to carry out schemes for the improvement of Glasshouse Street and St. Lawrence Road and at Kenton Bar. Estimated cost £54,050 and £19,405 respectively.

**Northumberland.**—C.C. recommended to approve £141,000 for the construction of a new bridge over the Tyne at Haydon Bridge. Plans by G. F. Garnett, county surveyors.

**Paisley, Renfrews.**—B.C. have received 75 per cent. grant towards improvement of the Barrhead Road (A.726). Estimated cost £100,000.

**Sheffield.**—City Engineer to be authorised to carry out footpath reinstatement works and lay-by construction in Carlisle Street East, between Upwell Street and Newhall Road, estimated cost £4,950; superelevation works Ecclesfield Road, near Deep Lane, £2,890; to construct a bus lay-by at the new bus terminal point in Abbey Lane, near the Bocking Lane/Hutcliffe Wood Road junction, £1,000; to construct a footpath along part of Sheffield Parkway, between Clifton Lane and the footbridge to be constructed near Bowden Housende Woods, £950.

**Stoke-on-Trent, Staffs.**—Birmingham Regional Hospital Board recommended to approve in principle, scheme for roads, pathways and car parks at Stallington Hall Hospital. Estimated cost £5,000.

**Stourbridge, Worcs.**—B.C. recommended to approve scheme for the demolition of 3 Victoria Street and laying out of site as an extension to the existing Victoria Street car park.

County Surveyor is to proceed with preparation of scheme for widening of the bridge at Dudley Road, for B.C.

**Teignmouth, Devon.**—U.D.C. have approved in principle scheme for widening of the road from Fore Street to Lower Brook Street to take a two-lane carriageway. Estimated cost £1,500.

**Tonbridge, Kent.**—U.D.C. recommended to prepare plans for the widening of Higham Lane (part). Estimated cost £20,000.

**Woolwich.**—B.C. recommended to approve scheme for the first phase of the widening of St. John's Passage. Estimated cost £65,800.

#### SEWERAGE, SEWAGE AND REFUSE DISPOSAL

**Biggseswade, Beds.**—R.D.C. to apply for sanction to borrow £152,286 and £73,675 respectively for the Blunham and Tempesford, and Meppershall sewerage schemes.

**Cerrig, Denbighs.**—R.D.C. to proceed with the Pentrefelin Sewerage and Sewage Disposal Scheme.

**Cemaes, Pembs.**—R.D.C. have applied for sanction to borrow £16,160 for proposed sewerage and sewage disposal scheme for the Llwynelyn and Pontrhydyceir district of Cilgerran.

**Chichester, Sussex.**—City Council recommended to prepare plans for the reconstruction of the trunk sewer from Sherborne Road at Westgate to Orchard Street at St. Paul's Road, to relieve the Tower Street sewer.

**Darlington, Dur.**—B.C. have submitted to the Ministry a £380,000 sewerage scheme for the town centre. It is expected that work will start next year.

**Folkestone, Kent.**—B.C. recommended to approve, and submit to Ministry for approval, scheme prepared by John Taylor and Sons, consulting engineers, Artillery House, Artillery Road, London, S.W.1, for the provision of main drainage at Sandgate. Estimated cost £34,200.

**Leeds.**—City Council recommended to approve in principle proposals for the construction of a relief sewer from Horsforth Station to Cookridge Mills, Horsforth, and authorise the construction of a section of the relief sewer from Horsforth Station to the Tinshill overflow, estimated cost £36,000; to apply for sanction to borrow £33,964 for culverting of Millshaw Beck at West Wood, Middleton.

**Liverpool.**—City Engineer to be authorised to carry out work involved in the construction 622 yards of relief sewer, between Edwards Lane and the Much Woolton Western sewer. Estimated cost £77,500.

City Council recommended to apply for sanction to borrow £880,000 for construction of an extension to the Liverpool North sewage disposal works, and £8,029 for reconstruction of 100 yards of foul and surface water sewers in Chelwood Avenue.

**Oxford.**—City Council recommended to approve, in principle, for submission to Ministry for preliminary approval and authority to invite tenders, scheme for the alleviation of flooding in New Cross Road and relieving the surcharge conditions to the Headington sewers generally, estimated cost £55,000.

**Sheffield.**—City Engineer to be authorised to carry out sewer replacement works at Greengate Lane, estimated cost £1,600.

**Shoreditch.**—B.C. recommended to invite tenders from eight selected contractors for the second contract in the sewer reconstruction programme. Estimated cost £247,000.

**Woolwich.**—B.C. recommended to approve scheme for the enlargement of sewers at Polytechnic Street and Calderwood Street to serve the extension of Woolwich Polytechnic. Estimated cost £3,400.

#### STREET LIGHTING

**Oswestry, Salop.**—Birmingham Regional Hospital Board recommended to approve in principle the provision of street lighting at Robert Jones and Agnes Hunt Hospital. Estimated cost £5,000.

**Stafford.**—Birmingham Regional Hospital Board recommended to approve in principle the provision of drive lighting at Standon Hall Hospital. Estimated cost £1,000.

**Woking, Surrey.**—U.D.C. propose the inclusion of Hill View Road and from the bottom of Hill View Road along White Rose Lane to the railway station in the group B street lighting scheme; recommended to prepare scheme for the provision of group B street lighting at Queen's Road and the Broadway, Knaphill, Prey Heath Road, Mayford, Pyrford Road, Lower Pyrford Road, Coldharbour Road, Claremont Road and Campbell Road, West Byfleet.

**Woolwich.**—B.C. recommended to approve scheme for the provision of group "A" street lighting at Nightingale Place, Plumstead Common Road and The Slade. Estimated cost £10,800.

#### CONTRACTS

Full details of the Contracts marked \* will be found in our Advertisement Columns.

#### BUILDING AND DECORATING (See also Housing Schemes)

**Barnsley, Yorks.**—Erection of a pig cooling hall at the public abattoir, Bunkers Hill, for B.C. The building to be a brick built, flat roofed, single-storey structure with an approximate total floor area of 1,500 super. ft. Documents from the Borough Engineer, Town Hall, Barnsley. Deposit £2 2s. Tenders by December 4.

**Batley, Yorks.**—Fourteen shops and 14 maisonettes at Upper Commercial Street, for B.C. Tenders by December 4.

**Belfast.**—Supply, and fixing of metal windows at College of Art, York Street, for City Council. Documents from the City Architect's Department, 40 Academy Street, Belfast 1, Tenders by November 16.

**Bexhill, Sussex.**—Improvements (installation of hot water systems, plastering to walls, floor tiling, etc.), to certain pre-war Council houses

in the London Road area, for B.C. Documents from the Borough Surveyor, Town Hall, Bexhill. Deposit £2 2s. Tenders by November 27.

**Birkenhead, Surrey.**—Erection of Arrowe Hill primary school, Woodchurch estate, for B.C. Documents from Borough Architect, 3 Conway Street, Birkenhead. Deposit £2 2s. Tenders by Dec. 4.

**Bournemouth, Hants.**—Modernisation of a laboratory at Porchester School, Porchester Road, for B.C. Documents from Borough Architect's Office, Room 106 Town Hall. Deposit £1 1s. Tenders by December 11.

**Bradford, Yorks.**—Construction of a single-storey garage building approximately 217ft. by 160ft. at Shearbridge Road Depot, for City Council, consisting of brick panel walls, insulated asbestos roof and electrically heated R.C. floor, etc. The foundations and steel framework of the building, including certain ancillary works, are already under construction and are not included in this contract. Documents from the City Engineer and Surveyor, Town Hall, Bradford 1. Deposit £2 2s. Tenders by November 15.

**Bridge-Bleas, Kent.**—Alterations and improvements, installation of hot water and bathrooms and incidental works at 25 houses at (1) Chequers Orchard, Petham, and (2) Town Road, Petham, as two separate contracts, for R.D.C. Documents from the Engineer and Surveyor, Council Offices, 41 Old Dover Road, Canterbury. Tenders by December 6.

**Bury, Lancs.**—Internal decoration of ground-floor rooms and storerooms at Listerfield House, Union Square, for B.C. Documents from Borough Engineers, Town Hall, Bury. Tenders by December 2.

**Caterham and Warlingham, Surrey.**—Erection of a brick extension to the vehicle repair shops, Chaldon Road Depot, Caterham, approximately 8ft. by 20ft. by 12ft. to eaves, for U.D.C. Documents from the Engineer and Surveyor, Council Offices, Caterham. Tenders by December 5.

**Cheadle and Gatley, Ches.**—Alterations necessary to provide additional bathroom accommodation at the club house, for U.D.C. The buildings are of brick construction. Documents from Engineer and Surveyor, Town Hall, Cheadle. Deposit £2 2s. Tenders by December 1.

**Chelmsford, Essex.**—Phase III of new livestock market at Victoria Road, for B.C. Applications by November 22.

**Clutton, Som.**—Erection of six prefabricated type garages with site works at Tiledown housing estate, Temple Cloud, for R.D.C. Documents from the Housing Manager, Council Offices, Temple Cloud, Bristol. Tenders by November 15.

**Devizes, Wilts.**—Improvements to provide modern conveniences at eight Council houses at The Pound, Bromham, for R.D.C. Documents from the Surveyor, Browfort, Devizes. Tenders by December 1.

**Down.**—Erection of temporary classrooms at Newtownbreda Primary School, for E.C. Documents from the Education Offices, 7 Brunswick Street, Belfast. Deposit £3. Tenders by November 15.

**Dulverton, Som.**—Improvements to four Council houses at Battleton, to provide hot water systems, etc., scheme 4, for R.D.C. Documents from the Council's Public Health Inspector and Surveyor, Exmoor House, Dulverton. Tenders by December 4.

**Ennerdale, Cumb.**—Erection of a public urinal at Arlecdon, for R.D.C. Documents from the Engineer and Surveyor, Council Chambers, Cleator, Cumberland. Tenders by November 17.

**Falmouth, Corn.**—Conversion of Cornish Ranges to open grates with back boilers and tiled surrounds, for B.C. (Contract 1): (1) 46 houses at Old Hill, Langton Road, Trevaylor Road and Trevithick Road; (2) 53 houses at Meadowbank Road. Documents from the Borough Surveyor, Municipal Buildings, Falmouth. Deposit £2 2s. cheque only. Tenders by November 27.

**Glasgow.**—Painter work in connection with the renovation of various schools, for City Council. Documents for each school from Architectural and Planning Department (Education Section—2nd Floor), 37 High Street, Glasgow, C.I. Tenders by November 16.

**Gravesend, Kent.**—Erection of a public convenience at Rochester Road, for B.C. Documents from the Borough Engineer and Surveyor, 6 Woodville Terrace, Gravesend. Tenders by December 18.

**Grimsby, Lincs.**—Erection of four two-storey lock-up shops, together with roadworks, paths, drainage and other ancillary works, in Sutcliffe Avenue, for B.C. Documents from J. V. Oldfield, borough engineer and architect, Municipal Offices, Town Hall Square, Grimsby. Deposit £2. Tenders by December 1.

**Harlow, Essex.**—Construction of a sub-depot at Bush Fair, for U.D.C. The area of the site is 378 ½yd. and the work will comprise the construction of reinforced concrete hard-standing and single-storey brick buildings,

together with ancillary works. Documents from A. W. R. Webb, engineer and surveyor, Town Hall, Harlow. Deposit £2 2s. cheques payable to Council. Tenders by November 20.

**Haverhill, Suffolk.**—Reroofing of the slate roof to the Town Hall, for U.D.C. Documents from the Surveyor, Council Offices, Haverhill. Tenders by November 18.

**Isle of Man.**—Extensions to the Mannin Infirmary, Braddan, for the Board of Social Services. Documents from S. F. O'Hanlon, architect, 46 Athol Street, Douglas. Deposit £2 2s.

**Kerry, Eire.**—Erection of a new technical school at Cahirciveen, for the vocational education committee. Documents from Gabriel M. Cleere, quantity surveyor, 11 Ely Place, Dublin. Deposit £15 15s. Plans seen at office of Co. Kerry Vocational Educational Committee, 24 Denny Street, Tralee, Co. Kerry. Tenders by Nov. 28.

**Lancashire.**—Replacement of existing strip flooring with linoleum and wood block flooring in east and west wing ground floor corridors at Ormskirk Edge Hill Training College, for C.C. Applications to the County Architect, P.O. Box 26, County Hall, Preston, by November 14.

**Loughborough, Leics.**—Preparation and painting of an 80ft. span tubular steel footbridge over the River Soar, for B.C. Documents from John S. Bates, borough engineer and surveyor, Southfields, Loughborough. Deposit £2 2s. Tenders by November 18.

**Mangotsfield, Glos.**—Provision of standard amenities, comprising the installation of lavatory basins and other ancillary works in 230 Council houses, for U.D.C. Documents from the Engineer and Surveyor, Council Offices, 26 South View, Staple Hill, Bristol. Tenders by November 17.

**Mossley, Lancs.**—Erection of public conveniences in the town hall grounds, for B.C. Documents from the Borough Engineer and Surveyor, Town Hall, Mossley. Tenders by December 1.

**Newcastle upon Tyne.**—Following at Prudhoe and Monkton Hospital in three separate contracts, for the Regional Hospital Board: (1) Single-storey workshop for Occupational Therapy, brick slated roof, floor area approximately 6,300 super. ft.; (2) sports pavilion, timber framing and weatherboard, floor area approximately 2,028 super. ft.; (3) clothing department and shops, brick, concrete flat roof, floor area approximately 12,100 super. ft.; (4) adaptations to the existing administration block, total floor area approximately 20,900 super. ft.; (5) two new small buildings brick, flat roofs, total floor area approximately 780 super. ft. B.—(1) Two single-storey 25-bed villas brick, slated roof, total floor area approximately 9,300 super. ft.; (2) one two-storey 50-bed villa, brick slated roof, total floor area approximately 10,500 super. ft.; (3) the contract also includes one new small mortuary building floor area approximately 900 super. ft., alterations to the recreation hall, improvements to the existing roads and provision of new access roads, paths and playground. C.—Ten two-storey staff houses (5 pairs); brick, tile roofs, area per house 1,030 super. ft. Tender documents available in December, 1961. Building work expected to start in April 1962. Submit names to the Secretary of the Board, Benfield Road, Newcastle upon Tyne 6, by November 17, stating in which contracts they are interested. A limited number of contractors may be selected to tender.

**Northern Ireland.**—Asphalting of roof from west wing to X-Ray department, Royal Victoria Hospital, Belfast, for the Northern Ireland Hospitals Authority. Documents from Superintendent Engineer, Area Maintenance Department, Broadway. Tenders by November 14.

**North Lonsdale, Lancs.**—Exterior painting of following houses, for R.D.C.: Fourteen, Linsly Green, Backbarrow; six, Browside, Backbarrow; four, Fellside, Backbarrow; six, Croft Garth, Broughton Beck; eight, High Keppleway, Broughton (1-8); six, Pitt Garth, Cartmel; six, Friars Garth, Cartmel; four, The Garth, Gleaston; five, Dalegarth, Leece; 16, Lingarth, Lindale; four, Malt Kiln Cottages, Newbiggin; 10, Moorgarth, Swarthmoor (1-6 and 43-46); two Greengarth, Scales; six, Park Garth, Little Urswick. Documents from the Council's Architectural Office, Todbusk, Springfield Road, Ulverston. Tenders by December 4.

**North Riding.**—Alterations and improvements at Springfield House, Stokesley, for C.C. Documents from the County Architect, County Hall, Northallerton. Tenders by Nov. 27.

**Northwich, Ches.**—Erection of six single garages on the Rudneath, Leftwich and Manor Park estates, and for a block of 13 garages and two store buildings on the Leftwich estate, for U.D.C. Documents from the Engineer and Surveyor, The Council House, Church Road, Northwich. Tenders by November 13.

**Peterborough.**—Alterations necessary to convert an existing building into a cloakroom and toilet at St. John's Close, Thorpe Road, for C.C. Documents from County Surveyor, County Offices, Bridge Street, Peterborough. Deposit £2 2s. Tenders by November 20.

**Petersfield, Hants.**—Improvement works at six council houses at Rowlands Castle, for R.D.C. Documents from the Engineer and Surveyor, The Old College, Petersfield. Deposit £2 2s. Tenders by December 5.

**Portsmouth.**—Copnor Bridge Bowls Pavilion and toilet, for City Council. Apply to the City Architect, 1 Western Parade, Portsmouth, by November 14. Deposit £1. It is a condition of tendering that the contractor, shall at the date of his tender, have in his employment not less than one indentured apprentice to every eight craftsmen who were employed by him on the previous January 1.

**Radcliffe, Lancs.**—Taking down and rebuilding part of the Stand independent churchyard wall, built in coursed rubble walling, for B.C. Documents from the Borough Engineer, Town Hall, Radcliffe. Tenders by December 2.

**Redditch, Worcs.**—Erection of convenience and cemetery office (two buildings), at Abbey Cemetery, for U.D.C. Written application to R. A. Noonan, engineer and surveyor, Old Crest, South Street, Redditch. Deposit £2 2s. Tenders by November 21.

**Rushden, Northants.**—Supply and fitting of electrical water heaters and sanitary appliances in 65 houses in Tennyson Road and Westfield Avenue, for U.D.C. Documents from A. G. Crowley, clerk of the council, Council Buildings, Rushden. Tenders by December 1.

**Saddleworth, Yorks.**—Alterations and extensions to Mechanics Institute, Uppermill, for U.D.C. Deposit £2 2s. Tenders by November 24.

**Seaham, Dur.**—Supply and erection of trusses and roof covering to existing garage building, approximately 100ft. long x 64ft. wide, for U.D.C. The trusses will bear on stanchions at approximately 11ft. centres; provision must be made for roof lighting and, if necessary, insulation. The building may be inspected by appointment. Inquiries to the Engineer and Surveyor, Cliff House, Seaham.

**Staffordshire.**—Erection of a single-storey infant welfare centre (2,300 sq. ft.), at Aldridge, Sreetly, for C.C. The construction is of concrete strip foundations and beds, load-bearing brick walls, and timber roofs. Applications to T. H. Evans, clerk of the County Council, County Buildings, Stafford, by Dec. 1. Deposit £2 2s., cheques payable to Council. Tenders by Jan. 12.

**Truro, Corn.**—Construction of four garages at Trethurne, Ladock, for R.D.C. Documents from the Council's Architect A. J. Cornelius, 13 Lemon Street, Truro. Tenders by December 11.

**Tynemouth, Northumb.**—Erection of 66 lock-up garages on various selected sites, for B.C. Documents from Borough Surveyor, 16 Northumberland Square, North Shields. Deposit £1 ls. Tenders by December 7.

**Westhoughton, Lancs.**—Following at Central Park, for U.D.C.: (1) Erection of park pavilion; (2) erection of aviary, glasshouse, garage, etc.; (3) construction of concrete paddling pool. Documents from the Surveyor, Town Hall, Westhoughton, Bolton. Tenders by November 14.

**West Riding.**—Erection of general store and superintendents' offices at W.R.C.C. Highways Depot, Delph, near Oldham, for C.C. Documents from the Divisional Architect, Flint Street, Huddersfield. Tenders by November 20.

**West Riding.**—Extensive minor repairs, prior to redecoration, at the Armthorpe Boys' Secondary, Juniors Girls' and Infants' Schools Mere Lane, Armthorpe, for C.C. Document from Divisional Education Offices, County Area Offices, Station Road, Doncaster. Tenders by November 14.

**Wilton, Wilts.**—Redecoration of certain rooms in the Town Hall, for B.C. Documents from the Borough Surveyor at the Council Offices, Wilton. Tenders by November 20.

**Worksop, Notts.**—Re-insulation and weatherproofing roof slab, public library and museum, for B.C. Deposit £5 5s. Tenders by November 17.

#### CLOTHING AND TEXTILES

**Bradford, Yorks.**—Supply of following for City Council: Police uniform clothing; helmets and caps; boots and shoes; repairs to boots and shoes; shirts, collars and ties; woollen, cotton and leather gloves; waterproof coats and leggings; stockings for policewomen. Documents from the Chief Constable, Town Hall, Bradford 1. Tenders by November 15.

**Durham.**—Supply during the period April 1, 1962, to March 31, 1963, of uniform and equipment required for the fire brigades, for Durham. Northumberland, North Riding and Cumberland C.C.'s items required:—Officers: Rain-

coats, caps, shoes, white shirts and collars; Firemen: Fire tunics, fire trousers, undress jackets and trousers, greatcoats, overall jackets and trousers, shoes, caps, leggings, leather fire boots, rubber boots (leather soles), blue shirts and collars, black ties, socks, raincoats and fleece linings, axes, leather belts and pouches, pullovers and black neckerchiefs; Firewomen: Jackets and skirts, raincoats, shoes, caps, white shirts and collars, nylon stockings. Documents from the Chief Fire Officer, Durham County Fire Brigade, Framwellgate Moor, Durham. Tenders by November 30.

**Harrow, Middx.**—Supply of overalls, for B.C. Tenders by November 21.

**Scarborough, Yorks.**—Supply of uniforms for certain officials and other employees in the service of the Corporation, for B.C. Documents from the Town Clerk's Office, Town Hall, Scarborough. Tenders by November 23.

**Southampton.**—Supply of fire brigade uniform, shoes, shirts, collars and ties, for B.C. Further particulars from Chief Officer, Fire Brigade Headquarters, St. Mary's Road, Southampton. Tenders by January 15.

**Southend-on-Sea, Essex.**—Supply of police uniforms, for B.C. Tenders by November 24.

**Wallasey, Cheshire.**—Supply of uniform clothing for B.C. Tenders by Dec. 5.

#### DEMOLITION

**Carmarthen.**—Demolition of three huts now used as living accommodation at Lon-y-prior, St. Clears, for R.D.C. The materials will become the property of the successful tenderer and he will be required to clear these from the site forthwith. Documents from the Surveyor, G. G. Thomas, Rural District Council Offices, Spilman Street, Carmarthen. Tenders by Nov. 15.

**East Lothian.**—Demolition of properties 144 to 178 (inclusive) at High Street, Prestonpans, for C.C. Documents from County Surveyor, County Buildings, Haddington. Tenders by November 24.

**Oldham, Lancs.**—Demolition and clearing away of 84 houses, three shops, two public houses, one works, and nine air raid shelters in the Clarkwell Street redevelopment area, for B.C. Documents from the Borough Engineer and Surveyor, 75 Union Street, Oldham. Deposit £2 2s., cheques, etc., crossed and payable to the Borough Treasurer, Oldham. Tenders by Dec. 1.

**Porthcawl, Glam.**—Demolition of Lias Road School and clearance of the site, for U.D.C. Documents from the Engineer and Surveyor, Council Offices, South Road, Porthcawl. Deposit £2 2s. Tenders by November 16.

**Ramsgate, Kent.**—Demolition of buildings on the Crosswall at the Royal Harbour, for B.C. Documents from the Borough Engineer and Surveyor, Municipal Buildings, Ramsgate. Deposit £2 2s. Tenders by December 1.

**Rugby, War.**—Demolition of Rainsbrook House and Cottage and site clearance, for B.C. Documents from the Borough Surveyor, Town Hall, Rugby. Tenders by November 14.

**Sunderland, Dur.**—Demolition of properties in William Street, for B.C. Documents from Borough Engineer, 27 Fawcett Street, Sunderland. Deposit £1 1s., cheques payable to Sunderland Corporation. Tenders by Nov. 25.

**Torquay, Devon.**—Demolition of 57 Union Street, and 2 and 4 Market Street, for B.C. Documents from the Borough Engineer, Town Hall, Torquay. Tenders by November 17.

#### ELECTRICAL

**Cardiff.**—Electrical installation in the proposed Fairwater County Primary School, Penrhyn Road, for City Council. Documents from W. S. Atkins and Partners, Arlbee House, Greyfriars Place, Cardiff. Deposit £2 2s. cheques payable to the Cardiff Corporation and crossed "Not negotiable and Co." Tenders by November 30.

**Kirkcaldy, Fifes.**—Supply and installation of 400 electric cookers and 200 electric wash-boilers, for B.C. Documents from Burgh Engineer, Town House, Kirkcaldy. Tenders by Nov. 27.

**Portsmouth.**—Installation of electrical and/or hot water systems, together with other improvement works in occupied council houses in groups of 20-40 at a time in the Portsea, Eastney and Wymering areas, for City Council. Applications to the Director of Housing, 1 Clarence Parade, Southsea, by November 16. Deposit £1. It is a condition of the tendering that the contractor shall at the date of tender have in his employment not less than one indentured apprentice to every eight craftsmen who were employed by him on the previous January 1.

#### FENCING

**Aberdeen.**—Supply and erection of steel palisade fencing and gates on the boundaries of the Dancing Cairns Quarries, Bucksburn, for City Council. Applications in writing to the City Architect, 11 Broad Street, Aberdeen. Tenders by November 17.

**\*Bedfordshire.**—Erection of Flexbeam guard rail on the bridge approaches on M.I. for C.C. Deposit £2 2s. Tenders by November 24.

**Blackburn, Lancs.**—Supply and erection of chain link and concrete post fencing at Fort Street Depot, for the Fylde Water Board. Documents from the Engineer, Fylde Water Board, Sefton Street, Blackpool. Tenders by November 16.

**Down.**—Gates and railings in connection with the new technical intermediate school, Baabridge, for E.C. Documents from R Ferguson and S. McIlveen, architects, 15 College Gardens, Belfast. Deposit £1 1s. Tenders by November 23.

**Hartford, Cheshire.**—Erection of approximately 180yd. of chain link fencing in Bradburn's Lane, together with the excavation of soil to level off to field and existing footpath, for Parish Council. Documents from T. G. Whittle, clerk of the council, 12 Ashley Drive, Hartford, Northwich. Deposit £2 2s. Tenders by November 13.

**Hereford.**—Erection of approximately 460yd. of chain link fencing at Kilvert Road, Hereford, and approximately 610yd. of Broxash Drive and Belmont Road, for City Council. Tenderers must submit separate prices, one for Kilvert Road, the other for Broxash Drive, Belmont Road. Documents from the City Architect, Town Hall, Hereford. Deposit £1 1s. Tenders by November 24.

**Strood, Kent.**—Erection of approximately 570 lin. yd. of chain link fencing on concrete posts at the Halling Sewage Disposal works, Marsh Road, Halling, for R.D.C. Documents from the Engineer and Surveyor, Council Offices, Frindsbury Hill, Strood. Tenders by December 1.

#### GAS AND WATER SUPPLY

**\*Atcham, Salop.**—Construction of two reservoirs for Pimhill and East Atcham water supply, for R.D.C. Deposit £2. Tenders by December 8.

**\*Braintree and Bocking, Essex.**—Laying water mains, for U.D.C. Deposit £2 2s. Tenders by November 24.

**\*Cain and Chippenham, Wilts.**—Laying water mains at Slaughterford, for R.D.C. Deposit £2 2s. Tenders by December 8.

**\*Darlington, Yorks.**—Additional river intake works at Broken Scar low lift pumping station, contract 140 for the Tees Valley and Cleveland Water Board. Applications by November 17. Tenders by January 3.

**East Shropshire.**—Oakengates Water supply contract 9, for the East Shropshire Water Board, comprising the construction of approximately 4,700 lin. yd. of 9in., 8in. and 6in. diameter spun-iron water mains, two reinforced concrete service reservoirs in six compartments. Documents from the Engineers, A. H. S. Waters and Partners, of 25 Temple Row, Birmingham 2. Deposit £5 5s. Tenders by December 8.

**Haltemprice, Yorks.**—Laying of approximately 500 lin. yd. of 6in. c.i. water main in Hallgate and Beck Bank, Cottenham, for U.D.C. Documents from the Engineer and Surveyor, Anlaby House, Anlaby. Deposit £1 payable to the Treasurer. Tenders by November 17.

**Hampstead.**—Supply and installation of filtration plant at the swimming baths which may be erected by the Council at Swiss Cottage, Hampstead (at an estimated total cost of £700,000), for B.C. Send names with a statement of similar works previously carried out to B. H. Wilson, town clerk, Town Hall, Haverstock Hill, Hampstead, N.W.3, by November 10. Tenders will be selected entirely at the Council's discretion, and the Council reserve the right to add others at any time. At a time to be appointed by the Council, and upon payment of a deposit of £52 10s., selected tenderers will receive a copy of the relevant documents.

**Haverfordwest, Pembs.**—Construction of a mass concrete and reinforced concrete service reservoir of 170,000 gallon capacity, together with a booster station at Glasfryn, St. Davids, including access roads and site fencing, and approximately 4,200yd. 6in., 100yd. 4in. and 240yd. of 3in. spun-iron and asbestos-cement water mains, with valves, fittings and ancillary works, for R.D.C. St. Davids lies approximately 15 miles west north-west of Haverfordwest. Documents from the Council's Surveyor and Water Engineer, 8-10 Picton Place, Haverfordwest. No deposit is required, but contractors are expected to return all drawings and documents, and the Council reserves the right to charge for all or any such items which are not returned. Tenders by December 4.

**\*Hiraethog, Denbighs.**—Laying water mains, H 33/1 contract 3, for R.D.C. Deposit £5 5s. Tenders by December 11.

**\*Kincardineshire.**—Loch Lee water supply scheme, first phase, contract 8, for C.C. Deposit £5. Tenders by December 5.

**\*Leeds.**—Supply and erection of pumping plant at Carlton Rise booster pumping station, for City Council. Tenders by December 5.

**\*Mid-Glamorgan.**—Middle service reservoir, Court Colman, near Bridgend, for the Water Board. Deposit £5 5s. Tenders by December 6.

**Muckamore, Antrim.**—Construction of water pipelines and animal drinking troughs, etc., Out Farms, Greenmount Agricultural College, for the Ministry of Finance. Documents from Room 103, Law Courts Building, Belfast. Tenders by November 21.

**\*Narberth, Pembs.**—Eastern Cleddau abstraction scheme, for R.D.C. Deposit £5 5s. Tenders by November 30.

**\*North Devon.**—Construction of a booster pump house in brickwork and tiled roof, 35ft. x 17ft., internally, with lean-to garage and detached fuel tank housing, at the treatment works at Bratton Fleming, near Barnstaple, contract 63A, for the Water Board. Documents from Rose and Raffety, engineers, 9 Brewer's Green, Buckingham Gate, Westminster, London, S.W.1. Deposit £2 2s. cheque only. Drawings seen at the office of the Engineers, or at the Office of the Chief Engineer (North), North Devon Water Board, Grenville House, Bortport Street, Barnstaple. Tenders by November 24.

**Omagh, Tyrone.**—Supplying and laying of approximately 3,764 lin. yd. of 2in. diameter class C Everite water mains at Doocrock, for R.D.C. Documents from the Rural District Council Offices, Omagh. Tenders by December 5.

**Preston, Lancs.**—Civil engineering works in connection with the new water treatment plant at Broughton, for the Fylde Water Board. The contract will comprise the excavation and construction of R.C. foundations and structures covering an area of 250ft. by 120ft. Tender documents will be available early in December, 1961. Preliminary drawings, soil investigation report, and other details may be seen at the board's head offices, Sefton Street, Blackpool, prior to receipt of the tender documents. Applications to the Board's Engineer. Tenders by January 11.

**South Cardiganshire.**—Construction of a reinforced concrete covered service reservoir, with earthen embankments, to contain 250,000 gallons, access road thereto, and other ancillary works in connection therewith, at PNPARC, on the A487 road, about two miles east of Cardigan, contract 24, for the Water Board. Documents from Rose and Raffety, engineers, 9 Brewer's Green, Buckingham Gate, London, S.W.1. Deposit £2 2s. cheque only. Drawings seen at the Office of the Engineer to the Board, 36 Alban Square, Aberaeron, Cards. Tenders by November 30.

**\*Watford, Herts.**—Laying water main from the Grove Waterworks to Abbo's Langley Reservoir for B.C. Submit names by Dec. 1. Deposit £2.

**Worthing, Sussex.**—Laying of approximately 2,000yd. of 9in. diameter water main, complete with valves, hydrants, connections, and contingent works, for B.C. Documents from Water Engineer, 47 Chapel Road, Worthing. Deposit £5. Tenders by November 20.

#### HARBOURS, PIERS AND SEA DEFENCE WORKS

**Newcastle upon Tyne.**—Newcastle Quay extension, for City Council. Deposit £5 5s. Tenders by December 5.

#### HEATING AND VENTILATING

**Belfast.**—L.p.h.w. heating, hot, cold and mains water and gas installations at Corporation Street local office extension, for the Ministry of Finance. Documents from Room 103, Law Courts Building, Belfast 1. Tenders by December 7.

**Cork, Eire.**—Installation of an l.p.h.w. heating system at Ballinora National School, Co. Cork, for the Office of Public Works. Documents from the Secretary, 51 St. Stephen's Green, Dublin. Tenders by November 15.

**East Anglian.**—Regional Hospital Board invite applications for inclusion in their approved list of contractors for hospital engineering services in the East Anglian Region (Cambridgeshire, Isle of Ely, Norfolk, Huntingdonshire, East and West Suffolk, Soke of Peterborough, and parts of South Lincolnshire and North Essex). Applications to the Board's Engineer, Anstey Hall, Trumpington, Cambridge, by November 11. Firms already on the list need not reapply unless they wish to amend the class of work, cost range and/or area of operation for which they are already included.

**Sale, Cheshire.**—Supply and installation of oil-fired central heating and hot water services to two blocks of adjoining aged persons flats, including communal rooms, laundry, etc., about to be erected at Roebuck Lane, contract 2/1961, for B.C. Documents from the Borough Engineer, Town Hall, Sale. Deposit £2 2s., payable to Council. Tenders by Dec. 6.

**Taunton, Som.**—Installation of electrically operated hot water systems and the provision of wash-hand basins in 20-34 Mountway Lane, Bishop's Hull, for R.D.C. Documents from the Surveyor, Mary Street House, Taunton. Tenders by December 4.

## HOUSING SCHEMES

**Bexhill, Sussex.**—Conversion of 31, Dorset Road, into ten flatlets to accommodate aged people, for B.C. Documents from the Borough Surveyor, Town Hall, Bexhill. Deposit £2 2s. Tenders by November 20.

**Bexhill, Sussex.**—Conversion of 9 and 11, Amherst Road, into 14 flatlets to accommodate aged people, for B.C. Documents from the Borough Surveyor, Town Hall, Bexhill. Deposit £2 2s. Tenders by November 20.

**\*Blackpool, Lancs.**—Redevelopment of Queenstown clearance area with flats and maisonnettes for B.C.

**Blackpool, Lancs.**—Fifteen one-bedroom flats and 11 stores and garages in Cawce Street/Devonshire Road, to be completed in 34 weeks, for B.C. Documents from the Borough Surveyor, P.O. Box 17, Blackpool. Deposit £2. Tenders by Nov 20.

**\*Canvey Island, Essex.**—Sixteen housing units and 12 garages etc., Smallgains allotment site, contract 51, for U.D.C. Deposit £2 2s. Tenders by November 24.

**Chapel-en-le-Frith, Derby.**—Fifty-seven Homeville traditional houses/bungalows, as follows, for R.D.C.: Peak Dale—eight maisonettes (including site preparation); Dove Holes—eight maisonettes (including site preparation); Chapel-en-le-Frith—16 bungalows (including site preparation); Chinley—four maisonettes and two bungalows; Hayfield—six bungalows; Charlesworth—13 houses. Civil engineering contractors may tender separately for site preparation works. Documents from the Homeville Co., Ltd., 12 Craufurd Rise, Maidenhead, Berkshire. Deposit £2 2s, payable to Council. Tenders by November 24.

**Chichester, Sussex.**—Twenty four flats and 46 bungalows for elderly persons at N.W. Parklands, for City Council. Documents from the City Engineer and Surveyor, Greyfriars, North Street, Chichester. Deposit £2 2s. cheques payable to the Corporation of Chichester. Tenders by December 8.

**\*Croydon, Surrey.**—Thirty maisonettes at Bedwardine Road for B.C. Tenders by Dec. 13.

**Dalbeattie, Kirkcudbright.**—Three blocks at Port Street comprising eight three-apartment and two two-apartment houses, and one block at Glenshalloch comprising two two-apartment houses, for B.C. Application to James M. Little, town clerk, Commercial Bank Buildings, Dalbeattie, by November 13.

**Denton, Lancs.**—Sixty-six houses (two and three bedroom type) in blocks of four and semi-detached pairs, at Dark Lane Farm 3 site, scheme 3, for U.D.C. Documents from the Engineer and Surveyor, Town Hall, Denton. Deposit £2 2s., cheques crossed and payable to council. Tenders by Dec. 11.

**Dodworth, Yorks.**—Housing at Gilroyd-Eastern section phase II, for U.D.C., scheme consists of 111 dwellings, four shops with maisonettes, communal rooms and warden's house and laundry, together with road and sewer works and site works. The council invite any contractor who has had experience of building works of this nature to apply for permission to submit a tender for the work. Applications should state size and location of previous housing schemes for Local Authorities, and should state the name of the architects responsible for each scheme, and to whom reference may be made. Applications to the Clerk of the Council, Council Offices, Dodworth, near Barnsley, by noon, November 13.

**Durham.**—Erection of standard police houses as follows, for the Co. Police Authority: (1) The Causeway, Wolsingham; (2) Hutton Henry; (3) Adolphus Street, Whitburn; (4) Primrose Gardens, Ouston. Applications to County Architect, South Street, Durham, by Nov. 15.

**East Suffolk.**—Three police houses with outbuildings at Halesworth, for the Standing Joint Committee. Submit names to E. J. Cundiff, county architect, County Hall, Ipswich, by November 13. Builders selected will be furnished with specifications and drawings on or about November 14, builders not selected will be notified at the same time. Tenders by December 5.

**Glasgow.**—Comprehensive redevelopment of Pollokshaws. Unit 1 (2, 3 and 4 storey blocks), areas A and B comprising 169 houses, for City Council. Documents from Architectural and Planning Department, 2nd Floor, 20 Trongate, Glasgow, C.I. Tenders by November 30.

**Gravesend, Kent.**—One hundred and twenty houses at Singlewell and Cruden Road extension sites, for B.C. Documents from the Borough Engineer and Surveyor, 6 Woodville Terrace, Gravesend. Tenders by December 18.

**Holywell, Flints.**—Twenty dwellings at Rhymwyn, Mold. Complete with roads, paths, fences, sewers, etc., for R.D.C. Documents from R. E. Roberts architect to the Council, Rural Council Offices, Halkyn Road, Holywell. Deposit £2. Plans seen at the office

of the Architect, or at the office of A. W. West quantity surveyor, Westminster Bank Chambers, Church Street, Wrexham. Tenders by January 4.

**Kingsclere and Whitchurch, Hants.**—Three pairs of bungalows, together with external services etc. at housing site 69—Sprents Lane, Overton, for R.D.C. Documents from Henshaw and Cheek, architects, Chantry House, 1 West Street Andover. Deposit £2 2s. Tenders by December 11.

**Kirkcaldy, Fifes.**—Eighty-five houses in two, four and five-storey blocks at Nicol Street, for B.C. Submit names to the Burgh Engineer, Town House, Kirkcaldy, by Dec. 1.

**Maidenhead, Berks.**—Fifty-eight houses together with all necessary drainage and site works at Cox Green estate, contract 5P, for B.C. Documents from the Borough Engineer and Surveyor, Town Hall, St. Ives Road, Maidenhead. Deposit £2 2s. Tenders by Dec. 13.

**Malling, Kent.**—Twenty bungalows in five-blocks (for aged persons), together with access road, drainage and ancillary works, at West Street, Wrotham, for R.D.C. Documents from the Engineer and Surveyor to the Council, Council Offices, West Malling. Deposit £2 2s. Tenders by December 5.

**Midlothian.**—One hundred and fifty-six permanent houses (112 three-apartment houses, 30 four-apartment houses and 14 five-apartment houses) and 58 lock-up garages at Newbattle New Community, for C.C. Apply to the County Architect, 32 Palmerston Place, Edinburgh, by November 20.

**Newry No. 2, Armagh.**—One-hundred-and-four houses at Cloughreagh, Bessbrook, for R.D.C. Documents from W. B. O'Donoghue, Clerk of Council, Rural District Council Offices, Daisy Hill, Newry, or the Quantity Surveyors, McElhinney and Partners, Ulster Bank Chambers, Newry. Deposit £10 10s. Tenders by Dec. 6.

**Norfolk.**—Erection of a district nurse's house at Downs Close, Hunstanton, for C.C. Documents from the County Architect, 27 Thorpe Road, Norwich. Tenders by November 27.

**\*Oldham, Lancs.**—One hundred and twenty flats and eight garages at Fitton Hill estate extension, for B.C. Deposit £2 2s. Tenders by December 4.

**Peterborough.**—Improvements to 25 Council houses at Helpston, for R.D.C. Documents from M. R. Gibbs, Council surveyor, 51 Priestgate, Peterborough. Tenders by Dec. 5.

**Pewsey, Wilts.**—Two bungalows and the construction of ancillary site works at Charlton, for R.D.C. Documents from the Engineer and Surveyor, Council Offices, Pewsey. Tenders by Nov. 24.

**\*Reigate, Surrey.**—Block of six flats and six stores at Taisboro, London Road, for B.C. Deposit £2 2s. Tenders by November 23.

**\*Salford, Lancs.**—Eight houses Highfield Road, for City Council. Deposit £2 2s. Tenders by December 6.

**Settle, Yorks.**—Following for R.D.C.: (a) One four block of one-bedroom bungalows at Park Crescent, Hellifield. (b) Four pairs of one-bedroom bungalows at Burnmoor Crescent, Ingleton. (c) One four block of two-bedroom flats (two storey) and two pairs of one-bedroom bungalows at Mill Close, Settle. Contractors may tender for the whole of the work or any part. Documents from the Council's Engineer and Surveyor, Town Hall, Settle. Deposit £3 3s. Plans seen either at the office of the Council's Engineer and Surveyor or at the office of J. Norman Spencer, architect, Dean House, Piccadilly, Bradford. Tenders by Nov. 24.

**South Kesteven, Lincs.**—Following bungalows for R.D.C.—Aslackby, Pt. O.S. 184—Village Street, 4; Pointon, Pt. O.S. 37—High Street, 4; Thurlby, Pt. O.S. 191—High Street, 4. Builders may tender separately or for all these dwellings. Documents from G. F. Andrews, Council quantity surveyor, 41 North Street, Bourne. Deposit £2 2s. Tenders by Dec. 12.

**Stanley, Yorks.**—Following at Church Lane extension, for U.D.C.: 22 three-bedroom, in blocks of two, 10 two-bedroom, in blocks of two; eight one-bedroom bungalows in blocks of four. Documents from H. W. Senior, engineer and surveyor, Coach Road, Outwood, near Wakefield. Deposit £2 2s. Tenders by November 20.

**Sunderland, Dur.**—One-hundred-and-seventy-six dwellings in two 11-storey blocks of 80/2 and three-person flats, and one four-storey block of 16 maisonettes, together with incidental site works, etc., for B.C. Documents from Borough Architect, Grange House, Stockton Road, Sunderland. Deposit £2 2s., cheques payable to Sunderland Corporation. Tenders by Nov. 28.

**Sunderland, Dur.**—One-hundred-and-fifty-six four-storey maisonettes in eight blocks, together with incidental site works, etc., for B.C. Documents from Borough Architect, Grange House, Stockton Road, Sunderland.

Deposit £2 2s. Cheques payable to Sunderland Corporation. Tenders by Nov. 28.

**Wallasey, Ches.**—Twenty one flats in three-storeys on a site fronting to Leasowe Road, for B.C. Applications to the Borough Architect, Town Hall, Wallasey.

**Walsall, Staffs.**—One block of 24 aged persons flatlets, at Ryecroft Place, documents obtained on the 13th November, from M. E. Habershon, Borough Engineer and Surveyor, Council House, Walsall. Deposit £2 2s. Tenders by Dec. 1.

**Walsall, Staffs.**—Eight houses, Cannon Street, for B.C. Document obtained on Nov. 15, from M. E. Habershon, Borough Engineer and Surveyor, Council House, Walsall. Deposit £2 2s. Tenders by Dec. 1.

**\*West Kesteven, Lincs.**—Grouped aged persons' accommodation at Colsterworth, for R.D.C. Deposit £2 2s. Tenders by November 30.

**West Lothian.**—Thirty houses to be erected in scheme of redevelopment at School Place, Uphall, for C.C.: (1) Excavator, brick etc. works; (2) carpenter and joiner work; (3) glazier work; (4) roughcast work; (5) plumber work; (6) plaster and cement work; and (7) electrical work. Applications stating which schedules are required to John Calder, county clerk, County Buildings, Linlithgow, by November 13.

**Wimbledon, Surrey.**—One block of nine flats and garages, for B.C. Documents from Borough Engineer and Surveyor, Town Hall, Wimbledon, by November 13. Deposit £2 2s.

## MATERIALS AND SUPPLIES

**Berkhamsted, Herts.**—Supply of materials for U.D.C. Refer to our issue of November 2, page 53. Tenders by December 14.

**Bournemouth, Hants.**—Supply of deck chairs, canvas, etc., for B.C. Refer to our issue of November 2, page 61. Tenders by November 14.

**Brighton, Sussex.**—Supply of (1) Four-unit motor alternator sets; (2) High voltage testing equipment for the New College of Technology, Electrical Engineering Dept., for B.C. Documents from the Director of Education, 54 Old Steine, Brighton, 1. Tenders by Nov. 18.

**\*Cornwall.**—Supply of materials, for C.C. Tenders by November 27.

**\*Dorking, Sussex.**—Supply of bitumen macadam for U.D.C. Tenders by Nov. 20.

**\*Durham.**—Supply of furniture, etc., for C.C. Tenders by Nov. 24.

**\*East Suffolk and Norfolk.**—Supply of timber and steelwork for River Thurne Womack Dyke scheme, for the East Suffolk and Norfolk River Board. Tenders by November 24.

**Flintshire.**—Following, for E.C.: (1) Mold Welsh Bilateral School: (a) Woodwork benches and other workshop furniture; (b) woodwork tools; (c) metalwork tools; (d) woodwork and metalwork machines. (2) For Glyndwr County Secondary School, Rhyl: (e) Metalwork benches. Applications (stating requirements) to B. H. Williams, director of education, County Education Offices, Mold. Tenders by November 28.

**Formby, Lancs.**—Supply of the following materials for the period ending December 31, 1962, for U.D.C.: (1) Bituminous macadam; (2) fine cold asphalt; (3) salt glazed ware pipes; (4) concrete kerbs and channels; (5) office coal and coke. Documents from the Engineer and Surveyor, Council Offices, Formby. Tenders by November 18.

**Glasgow.**—Supply of electrical materials for six months' period ending June 30, 1962, for City Council. Documents from the Manager, Housing and Works Department, 266 George Street, Glasgow, C.I. Tenders by November 17.

**Northern Ireland.**—Supply of fireplaces to 16 dwellings at Dungannon (Carland Road), for the Northern Ireland Housing Trust. Documents from the offices of the Trust, 12 Hope Street, Belfast, 12. Tenders by November 20.

**\*Norfolk.**—Supply of materials for C.C. Tenders by Dec. 7.

**Padiham, Lancs.**—Supply of petroleum, diesel oil, and gas (heating) oil required by them for the year ending December 31, 1962, for U.D.C. Documents from W. Vevers, clerk of the Council, Town Hall, Padiham. Tenders by November 30.

**Seaton Valley, Northumb.**—Supply of sanitary goods, fireplaces, electrical goods, ironmongery, and garden gates for 32 houses at Seghill, for U.D.C. Documents from the Surveyor, Council Offices, Seaton Delaval, Whitley Bay. Tenders by Nov. 18.

**Tyrone.**—Supply for the year ending December 31, 1962, of general stores, including tools, oils and concrete products, for C.C. Tender forms from, and samples inspected at, Repair Depot, Dungannon. Tenders by November 30.

## MISCELLANEOUS

**\*Chelmsford, Essex.**—Reclaiming waste materials at Princes Road refuse tip for B.C. Tenders by Nov. 27.

## PLANT AND MECHANICAL TRANSPORT

**Barking, Essex.**—Supply of four close-coupled four-wheeled trailers suitable for low-loading, for B.C. Documents from the Borough Engineer and Surveyor, Town Hall, Barking. Tenders by November 17.

**Bristol.**—Supply of one self-propelled major pump on Bedford chassis during financial year ending 31st March, 1962, for the Fire Brigade. Documents from Chief Fire Officer, Fire Brigade Headquarters, Bridewell Street, Bristol, I. Tenders by November 18.

**Dundee, Angus.**—Manufacture, supply, erection and testing, complete in all respects, on the trustees' rails at The Queen Elizabeth Wharf, Dundee Harbour, of three level lifting electric travelling jib cranes of portal type (one either 10 tons, 7 tons or 5 tons lifting capacity and two of 3 tons lifting capacity), for the Dundee Harbour Trustees. Documents from Alexander Smith, general manager and engineer, Dundee Harbour Trust, Harbour Chambers, Dock Street, Dundee. Tenders by December 7.

**Harrogate, Yorks.**—Supply and fitting of a heavy duty Cameron Gardner Rearloda industrial bucket, for B.C. Specifications from the Chief Public Health Inspector, Municipal Offices, Harrogate. Tenders by November 23.

**Holborn.**—Supply of a mechanical road sweeper/collector, preferably capable of sweeping nearside and offside channels, for B.C. Inquiries to the Borough Engineer, Town Hall, High Holborn, W.C.1, prior to submission of tender are invited. Tenders by November 30.

**Huntingdonshire.**—Mechanical haulage on an hourly basis, tractor hire, and mowing upon highway verges, as required by the County Surveyor's Department during the period from January 1, 1962, to December 31, 1962, for C.C. Documents from the County Surveyor, Walden House, Huntingdon. Tenders by November 30.

**Isle of Wight.**—Supply of the following vehicles and equipment, for C.C.: (1) one diesel Ferguson 35 tractor with drawbar and hydraulic trailer hitch; (2) one hydraulic compressor for use with Ferguson 35 tractor, complete with 60lb. paving breaker. Documents from the County Surveyor, County Hall, Newport. Tenders by Nov. 14.

**Liverpool.**—Supply of two 5cwt. vans for City Council. Documents from the City Engineer and Surveyor, Municipal Building, Liverpool, 2. Tenders by Nov. 15.

**Melford, Suffolk.**—Supply of a new 25 cu. yd. dual tip refuse collector for R.D.C. Particulars from the Surveyor and Senior Public Health Inspector, Council Offices, Chilton House, Newton Road, Sudbury. Tenders by Nov. 18.

**Shoreham-by-Sea, Sussex.**—Supply of one 5cwt. petrol-engined van and for taking one second-hand 5cwt. van in part-exchange, for U.D.C. Documents from the Surveyor to the Council, St. Wilfrid's Ham Road, Shoreham-by-Sea. Tenders by November 27.

**Staffordshire.**—Supply of three Bedford type "B" water tenders and one Land Rover fire tender, for C.C. Documents from the Chief Fire Officer, Brigade Headquarters, Pirehill, Stone, Staffs. Tenders by December 20.

## PLAYING FIELDS, PARKS, ETC.

**Bangor, Down.**—Grading, levelling, draining, seeding and cultivation of proposed new playing fields at Rathgael, near Bangor, for the Malone and Whiteabbey Training Schools Management Board. Documents from W. H. Stephens and Sons, quantity surveyors, 13 Donegall Square North, Belfast, 1. Deposit £5 5s. Plans seen at the offices of Architects Associated (N.I.), 54 Elmwood Avenue, Belfast, 9, or the quantity surveyors. Tenders by November 15.

**Belfast.**—Formation of playing fields at Orangefield site, for City Council. Documents from the City Architects Department, 40 Academy Street, Belfast, 1. Deposit £5, cheques payable to Belfast Corporation. Tenders by November 16.

**Birmingham.**—Laying out Woodland Garden of Rest, including construction of gravel paths, supply and planting of trees shrubs and hedges at Yardley Crematorium for City Council. Documents from the General Manager, Parks Department, Baskerville House, Civic Centre, Broad Street, Birmingham, 1. Deposit £2 2s. Tenders by Nov. 13.

**Birmingham.**—Layout of Orchard Garden of Rest, including construction of gravel paths, kerbing, supply and planting of ornamental trees, shrubs and herbaceous plants at Lodge Hill Crematorium, Selly Oak, for City Council. Documents from the General Manager, Parks Department, Baskerville House, Civil Centre, Broad Street, Birmingham, 1. Deposit £2 2s. Tenders by Nov. 13.

**Ealing, Middx.**—Layout of following, for B.C.: (1) Southern portion of Claypans Recreation Ground; (2) 1st stage of Lime

Tree Park, Northolt. Documents from the Parks Superintendent, Ealing Central Sports Ground, Horsenden Lane South, Perivale, Greenford, Middx. Deposit £2 per set. Tenders by noon, November 30.

**Manchester.**—Layout of playing fields at St. Mary's Road Primary School, Newton Heath, for City Council. Documents from the City Architect, P.O. Box 488, Town Hall. Tenders by November 28.

**Sutton-in-Ashfield, Notts.**—Construction of a new bowling green at the Lawn Pleasure Grounds, for U.D.C. The works include the regrading of approximately 2,700 cu. yd. of material, the laying of approximately 600 lin. yd. of land drains, and appurtenant works such as seeding, etc. Documents from the Engineer and Surveyor, Forest Lodge, Station Road, Sutton-in-Ashfield. Tenders by December 16.

**\*West Riding.**—Demolition of disused gun site and reclamation of land, for C.C. Tenders by December 4.

## ROADS, BRIDGES AND SITE WORKS

**\*Acton, Middx.**—Laying out car park, for B.C. Tenders by November 30.

**\*Altringham, Ches.**—Making up Bridgewater Road (part), for B.C. Deposit £2 2s. Tenders by November 27.

**Altringham, Ches.**—Siteworks for garages at Mossfield Road, Broomwood estate, for B.C., comprising kerbing, drainage, foundations, water services, surfacing and concrete bases for garages. Documents from the Borough Surveyor's Department, Town Hall, Altringham. Tenders by November 20.

**Andover, Hants.**—Construction of site concrete and forecasts for prefabricated garages, eight at Hedges Close, Shipton Bellinger, and four at The Close, Hatherden, for R.D.C. Documents from the Engineer and Surveyor, Council Offices, Junction Road, Andover. Tenders by Nov. 16.

**Artrincham, Ches.**—Series of trial borings in a number of areas throughout the Rural District, for R.D.C. Documents from W. D. R. and R. T. Taggart, consulting engineers, 13 College Gardens, Belfast 9. Deposit £3 3s. Tenders by November 24.

**\*Aylesbury, Bucks.**—Siteworks for 88 garages at Meadowcroft, for B.C. Deposit £2 2s. Tenders by November 24.

**Banbridge, Down.**—Scarpa Road improvement and reconstruction scheme stretching from the Urban District Boundary to the Downshire Bridge, a distance of 1,250 lin. yd., for U.D.C., comprising widening and adjustments to the horizontal and vertical alignment of the road including 15,000 cu. yd. bulk excavation, 8,000 cu. yd. filling, the provision of a surface water drainage system, bituminous macadam surfacing, flagged footpaths, kerbing and ancillary works. Documents from J. G. McKinney, engineer and surveyor, Town Hall, Banbridge. Deposit £5 5s. Tenders by Nov. 27.

**\*Barnet, Herts.**—Final making up of carriageway at Whitings Hill housing estate, section 3b, for U.D.C. Tenders by November 25.

**\*Beckenham, Kent.**—Making up parts of The Avenue, Westgate Road and Ash Tree Close, for B.C. Deposit £2. Tenders by November 27.

**Blackpool, Lancs.**—Construction of approximately 400 lin. yd. of 12in./15in. diameter sewer, and 2,800 sq. yd. of carriageway, off Clifton Road, for B.C. Documents from Borough Surveyor, Municipal Offices. Deposit £2. Tenders by Nov. 23.

**Bournemouth, Hants.**—Construction of new asphalt area at Boscombe Holy Cross School, Parkwood Road, Boscombe, for B.C. Documents from the Borough Architect's Office, Room 106, Town Hall, Bournemouth. Deposit £2 2s. Tenders by December 8.

**Brentford and Chiswick, Middx.**—Construction of a service road and sewers, from the Ham to St. Lawrence's Church, Brentford, for B.C., comprising a carriageway of bitumen macadam surfacing on hardcore foundation, kerbing, footways, and 9in. diameter soil and surface water sewers. Length of road, 63 lin. yd.; area of carriageway, 425 sq. yd.; length of sewers, 170 lin. yd. Documents from the Borough Engineer, Town Hall, Chiswick, W.4. Tenders by December 13.

**Brighouse, Yorks.**—Reconstruction of Elland Road, North Cut and Cromwell Bottom, for B.C., comprising the construction of approximately 70 lin. yd. of dry stone wall, 5ft high, 180 lin. yd. of stone retaining wall 5ft high in cement mortar and 40 lin. yd. of stone fence wall in cement mortar 4ft. 6in. high. Documents from the Borough Engineer, Commercial Street, Brighouse. Deposit £1. Tenders by November 18.

**Chelmsford, Essex.**—Resurfacing of Rainsford Lane from Crampford Road to Andrews Place (South), for B.C. The work comprises regulating the existing carriageway surface and a widened section of carriageway with bituminous concrete and surfacing the complete carriageway with cold asphalt and precoated chippings. Documents from the Borough En-

gineer and Surveyor, Municipal Offices, Coval Lane, Chelmsford. Deposit £2 2s. Tenders by November 27.

**\*Dartford, Kent.**—Resurfacing parts of Heath Lane, Park Road and Oakfield Lane for B.C. Deposit £2 2s. Tenders by Nov. 28.

**Dun Laoghaire, Eire.**—Provision, laying and rolling of approximately 1,700 sq. yd. of hot rolled asphalt at Hyde Road/Ulverston Road, Dalkey, for B.C. Documents from the Town Clerk, Town Hall, Dun Laoghaire. Tenders by Nov. 20.

**\*East Suffolk.**—Heating and planing works, contract 49, for C.C.

**Forfar, Angus.**—Site servicing for first phase of west end re-development, for B.C., comprising sewerage and drainage, street lighting, water main tracks, tile drainage and fencing, as well as roads and footpaths. Apply at once to the Town Clerk. Drawings seen at the Burgh Surveyor's Office, Forfar.

**\*Gloucestershire.**—Soil survey for the London-South Wales Motorway, M.4, for C.C. Tenders by November 27.

**\*Gloucestershire.**—Land reclamation for the proposed fire and ambulance station, Stroud, for C.C. Applications by Nov. 14.

**Hampshire.**—Widening the existing carriage-way of trunk road A.30 to 33ft. between Homsteads Road and the Blue Hut Cafe (approximately 1,550yd.), and the provision of a short length of dual carriageway at the junction with Kempshott Lane, Basingstoke, for C.C. The works include excavation, surface water drainage, carriageway construction in gravel, lean-mix concrete and bitumen macadam, and ancillary works. Applications to H. N. Jenner, The Castle, Winchester, by November 16.

**Hereford.**—Cemetery extension, stage 1, for City Council, comprising bulk excavation and fill to required levels, construction of approximately 850 sq. yds. of footpath and carriageway with pitched foundation and tar-spray and chip final surfacing, and all incidental works. Documents from the office of F. Margerison, City engineer and surveyor, Town Hall, Hereford. Deposit £2 2s. Tenders by Nov. 15.

**\*Hornchurch, Essex.**—Repairs to accommodation bridge over railway between Burnway and Woodhall Crescent, for U.D.C. Deposit £2 2s. Tenders by November 20.

**Ilford, Essex.**—Site development works-land between Fullwell Avenue and The Glade stage II, for B.C., comprising approximately 2,860 lin. yd. of precast concrete kerb, 4,000 sq. yd. of precast concrete flagging to footways, and the paving of 5,300 sq. yd. of special areas in precast concrete flagging, precast exposed aggregate paving and cobblestones, together with drainage and all ancillary works. Documents from the Borough Engineer, Town Hall, Ilford. Deposit £2 2s. Tenders by November 21.

**Ilford, Essex.**—Site completion work at Green Lane and Inglehurst Gardens, for B.C., involving the laying of approximately 300 sq. yd. of 8in. reinforced concrete in two lay-bys, and the taking-up and re-laying of approximately 400 sq. yd. of paving, together with ancillary edging, kerbing, and drainage works. Documents from the Borough Engineer, Town Hall, Ilford. Deposit £2 2s. Tenders by November 21.

**Inverness.**—Harbour Road extension, for B.C., comprising the construction of approximately 100 lin. yd. of 42ft. roadway, including a 15in. diameter fireclay sewer and excavation for a 6in. diameter water main, and ancillary works. Documents from the Burgh Surveyor, Town House, Inverness. Tenders by November 18.

**Irlam, Lancs.**—Making up of School Lane, Cadishead, for U.D.C. Documents from the Engineer and Surveyor, Council Offices, Irlam. Deposit £1. Tenders by December 1.

**Lindsey.**—Improvement of the approaches to the Keadby Trent Bridge, on the Sheffield-Grimbsy trunk road, A.18, for C.C. Involving realigning, widening and regrading of the trunk road for a total distance of approximately 800 lin. yd. The work comprises, inter alia: (1) The lowering of the trunk road approximately 3ft. at the railway bridge and level crossing, on the western approach; (2) improvement of junction with road B.1450, including column and bollard lighting; (3) 4,800 sq. yd. new carriageway (dense tar base and surfacing), 5,000 sq. yd. carriageway re-shaping, 3,500 sq. yd. tarmacadam footpath, 6,000 cu. yd. excavation; (4) fencing, surface water drainage, kerbing and bus draw-ins. Documents from the County Surveyor, County Offices, Newland, Lincoln. Deposit £5 5s. cheques payable to Council. Drawings seen by appointment, at the County Surveyors' Office or at the offices of the Divisional Road Engineer, Ministry of Transport, Block 6, Government Buildings, Chalfont Drive, Nottingham, during normal office hours (Monday to Friday). Tenders by November 29.

**Lunesdale, Lancs.**—Tarmacadam paving to hard-standing in garage area at the rear of

the Council Offices and ancillary works in connection with the erection of a precast concrete portal frame building, for R.D.C. Documents from John A. Hallsworth, clerk to the Council, Council Offices, Hornby, near Lancaster. Tenders by Nov. 14.

**Merton and Morden, Surrey.**—Following for U.D.C.: (1) Reconstruction of part of the carriageway in (a) Coombe Lane, and (b) Burlington Road, in lean mix concrete with hot rolled asphalt surface—area about 3,000 sq. yd. for reconstruction and 8,000 sq. yd. of surfacing; (2) surfacing of part of the carriageway in (a) Links Avenue in hot rolled asphalt—area about 3,000 sq. yd., (b) Kenley Road in tarmacadam—area about 1,800 sq. yd. Documents from the Engineer and Surveyor, Morden Hall, S.W.19. Tenders by November 20.

**Midlothian.**—Construction of approximately ½ mile of new trunk road at Currie Inn, on route A.7, for C.C. Documents from the County Surveyor, 32 Palmerston Place, Edinburgh. Deposit £2. Tenders by November 29.

**Neath, Glam.**—Extension of estate road at Bryn Bedd housing estate, Seven Sisters, for R.D.C., involving the laying of approximately 411 super. yd. of tarmacadam, 105 lin. yd. of precast concrete kerbing and other appurtenant works. Documents from Alex Mandeville, Council's engineer and surveyor, Council Offices, 18 Orchard Street, Neath. Deposit £2 2s. Tenders by November 21.

**Newcastle upon Tyne.**—Roads and sewers Newbiggin Hall housing estate and Shieldfield redevelopment, for City Council. Tenders by December 7.

**Newport, Mon.**—Advance preparation works involved in the construction of approximately 70 lin. yd. of carriageway, including a 9in. diameter sewer and ancillary works at Cheshire Avenue estate, for B.C. Documents from the office of the Borough Engineer, Civic Centre, Newport, Mon. Deposit £2 2s. Tenders by November 20.

**North Riding.**—Supplying and erecting fabricated steelwork in the superstructure of the bridge over the River Ure, 262ft. long, with welded steel main girders up to 104ft. long on the Boroughbridge By-pass, trunk road A.1, for C.C. Documents from the County Surveyor, County Hall, Northallerton, Yorks. Deposit £5. Tenders by December 14.

**Oldbury, Wores.**—Making-up and carriageway surfacing at Lion Farm estate and Kingsway East—contract 61/13, for B.C., comprising the provision and laying of approximately 680 tons of bituminous macadam and approximately 2,350 sq. yd. of hot rolled asphalt and dense tar surfacing at the above, together with various ancillary works. Documents from Borough Engineer and Surveyor, Municipal Bank Chambers, Oldbury. Deposit £2 2s. cheques payable to the Borough of Oldbury. Tenders by November 16.

**Pontefract, Yorks.**—Excavation for, and construction of, approximately 600 sq. yds. of tarmacadam and cold asphalt footpath, together with approximately 420 lin. yd. of precast concrete kerbing, channelling and edging; the construction and seeding of grass margins, excavations for and fixing of surface water gullies and connection to existing sewer and other ancillary works, at Eastbourne View, Baghill, for B.C. Documents from the Borough Engineer, Municipal Offices, Pontefract. Tenders by Nov. 28.

**Poole, Dorset.**—Making up of Corfe Way (part), for B.C. Deposit £2 2s. Tenders by November 20.

**Risca, Mon.**—Making up of three private streets involving the total construction of 1,200 sq. yds., of carriageway, 550 sq. yds. of footways together with incidental roadworks, for U.D.C. Documents from the Engineer and Surveyor's Office, Council Offices, Risca. Deposit £3 3s. Tenders by Dec. 5.

**St. Helens, Lancs.**—Making-up of eight streets in the Dentons Green area, contract 2172, for B.C. The works comprise excavation, drainage and construction of carriageways and footways. Documents from M. Ward, borough engineer and surveyor, Town Hall, St. Helens. Deposit £2 2s. Tenders by November 27.

**Stanley, Yorks.**—Construction of roads and sewers on Church Lane housing estate extension, Outwood, for U.D.C. The laying of approximately 1,380 lin. yd. of 12in., 9in. and 6in. diameter foul and surface water sewers and approximately 4,900 sq. yd. of tarmacadam carriageway. Documents from H. W. Senior, engineer and surveyor, Coach Road, Outwood, near Wakefield. Deposit £2 2s. Tenders by November 20.

**Stoke-on-Trent, Staffs.**—Making up of Eden Grove, etc., Meir, for City Council. Deposit £2. Tenders by November 15.

**Waltham Holy Cross, Essex.**—Brooker Road extension, for U.D.C. Deposit £2 2s. Tenders by November 23.

**Wisbech, Cambs.**—Surfacing carriageways at Tinker's Drove estate, for B.C. Tenders by November 27.

#### SEWERAGE, SEWAGE AND REFUSE DISPOSAL

**Bishop Auckland, Dur.**—Two hundred and twelve conversions to water carriage system in the district, for U.D.C. Deposit £1 1s. Tenders by November 27.

**Bolton, Lancs.**—Sinking of 23 trial boreholes on the site of the Ringley Fold sewage treatment work for the Bolton and District Joint Sewerage Board. Documents from the Engineer to the Board, Town Hall, Bolton. Deposit £5 5s. Tenders by November 20.

**Boston, Lincs.**—Freiston and Butterwick, Fishtoft and Wyberton extension, contract 5, for R.D.C. Deposit £10. Tenders by January 8.

**Bristol.**—Construction of generating station and sludge digestion plant at the proposed new sewage treatment works of King's Weston Lane, Avonmouth, contract 17, for City Council. Works include heavy piled foundations, excavations in soft alluvium construction of a generating station of 2,500-kVA capacity complete with workshop, four reinforced concrete heated primary sludge digestion tanks of 2.4 million gallons capacity, together with heat exchanger building with heat exchangers and pumps, two open reinforced concrete secondary sludge digestion tanks of 0.9 million gallons capacity and a steel tank and gasholder of 56,000 cu. ft. capacity on, and including, a piled reinforced concrete raft. Also included in the contract will be site works, roads, footpaths, water mains, and miscellaneous pipeworks. Provision and installation of generating plant for generating station is subject to separate contract. Documents from City Engineer and Planning Officer, Cabot House, Deanery Road, Bristol, 1. Deposit £10 (cheque payable to City Council). Tenders by Nov. 27.

**Chelmsford, Essex.**—Sewer extension at Bells Chase—Great Baddow, for R.D.C., comprising the provision, laying and jointing of approximately 65 lin. yd. of sewer in 6in. glazed stoneware pipes and two precast concrete ring manholes. Documents from the Engineer and Surveyor, Rural District Council Offices, New London Road, Chelmsford. Deposit £1 1s. Tenders by November 20.

**Easingwold, Yorks.**—Construction of 1,000 lin. yd. of 6in. diameter sewers with manholes and other ancillary work, 650 lin. yd. of 4in. and 6in. diameter house connections, 1,935 lin. yd. of 3in. diameter rising main, two pumphouses and pumpwells and extensions to existing sewage disposal works at Linton-upon-Ouse, for R.D.C. Documents from the Housing Surveyor, Council Offices, Stillington Road, Easingwold. Deposit £2 2s. cheque. Further details from D. H. Moore, Council's consulting engineer, 12 Valley Bridge Parade, Scarborough. Tenders by November 30.

**Evesham, Wores.**—Middlesex, Pebworth sewerage, for R.D.C., comprising the construction of approximately 130yd. of 6in. sewer, 80yd. of 4in. sewer and a small sewage disposal works, to deal with the flow from 14 houses, together with all incidental works. Documents from the Engineer and Surveyor, Lansdowne, Port Street, Evesham. Tenders by December 4.

**Exeter, Devon.**—Construction of a surface water sewer at Bovemoors Lane, for City Council, comprising supply, laying and jointing of approximately 235yd. of 12in. diameter, 50yd. of 9in. diameter, and 30yd. of 6in. diameter concrete spigot and socket pipes, including the construction of manholes and gullies. Documents from John Brierley, city engineer and surveyor, Municipal Offices, 7 Southernhay West, Exeter. Deposit £2 2s. Tenders by November 20.

**Friern Barnet, Middx.**—Construction of approximately 545yd. of 9in. to 36in. reinforced concrete pipe sewers, together with necessary manholes, at Bethune Recreation Ground, Beaconsfield Road, for U.D.C. Documents from the Engineer and Surveyor, Town Hall, Friern Barnet, N.11. Tenders by November 30.

**Frimley and Camberley, Surrey.**—Construction of Frimley Road-Field Lane surface water sewer, for U.D.C., having a total length of approximately 1,160yd. and comprising 39in., 36in. and 30in. diameter thick walled reinforced granite concrete pipes with cornelius flexible joints, all ancillary works including concrete manholes, and deepening, widening and realigning the outfall ditch for a length of approximately 300yd., and replacing all culverts with 39in. diameter reinforced concrete pipes as before. Documents from the Engineer and Surveyor, Municipal Buildings, Camberley. Tenders by November 20.

**Godstone, Surrey.**—Installation of two 5in. diameter submersible pumps, driven by 10 h.n. electric motors, together with the laying of approximately 200yd. of 10in. diameter asbestos-cement rising main, and ancillary works, at Burstow sewage disposal works, for R.D.C. Documents from the Engineer and

Surveyor, Council Offices, Oxted. Deposit £2 2s. Tenders by November 22.

**Hartley Wintney, Hants.**—Main drainage of Hawley and Yateley, stage iv, B7 contract 7, for R.D.C. Deposit £5 5s. Tenders by December 7.

**Heanor, Derby.**—Sewerage works at Aldred's Lane pumping station, for U.D.C. Works comprise the laying of approximately 68yd. of 18in. and 21in. spun iron pipes and 9yd. of 6in. salt glazed ware pipes. Documents from J. H. Garside, engineer and surveyor, Council Offices, Ilkeston Road, Heanor. Deposit £3 3s. Tenders by Nov. 17.

**Heanor, Derby.**—Re-laying a 9in. sewer at High Street, Loscoe, for U.D.C. Works comprise the re-laying of approximately 346 yards of 9in. salt glazed ware sewer. Documents from J. H. Garside, engineer and surveyor, Council Offices, Ilkeston Road, Heanor. Deposit £3 3s. Tenders by Nov. 17.

**Hornchurch, Essex.**—Supply, on or after April 2, 1962, of the following for the sewage pumping station, Parsonage Road, Rainham, for U.D.C.: (1) Sewage pumping plant, electric motors and ancillary equipment, wiring and pipework, valves and fittings, with the services of a skilled fitter subsequently to supervise the erection of the plant on site (the proposed pumping station is required to deal with crude sewage at a maximum rate of approximately 275 g.p.m.); and/or (2) ironwork, including a manhole cover and frame, a penstock and galvanised mild steel ladders and handrails. Documents from the Engineer and Surveyor, Council Offices, Billet Lane, Hornchurch. Deposit £2 2s. Tenders by November 13.

**Hornchurch, Essex.**—Construction of a soil sewer at Roneo Corner, for U.D.C. The works comprise the construction of approximately 75 lin. yd. of 15in. diameter, 120 lin. yd. of 18in. diameter and 170 lin. yd. of 21in. diameter concrete pipe sewer, with 3 in-situ concrete manholes, 5 manholes in brickwork and ancillary works. Documents from the Engineer and Surveyor, Council Offices, Billet Lane, Hornchurch. Deposit £2 2s. Tenders by Nov. 20.

**Northwich, Ches.**—Construction of one settling tank, one filter, one humus tank, four sludge drying beds, and other work at the existing sewage treatment works at Utkinton, near Tarporley, for R.D.C. Documents from the Engineer and Surveyor, Whitehall, Hartford, Northwich. Deposit £2 2s. Tenders by November 23.

**Oadby, Leics.**—Construction of the following works, for U.D.C.: (a) the construction of a reinforced concrete underground pumping station, including the provision of the pumping equipment and ancillary works; (b) the construction of 435yd. of 10in. diameter cast-iron rising main; (c) the construction of 175yd. of 9in. diameter cast-iron sewer. Documents from the Engineer and Surveyor, Municipal Offices, Oadby Frieth, Oadby. Deposit £3 3s. Tenders by December 11.

**Poole, Dorset.**—Baiter surface water pumping scheme for B.C., comprising the construction of a reinforced concrete pumping station and 400yd. of 21in. cast-iron rising main with sea outfall. Documents from Borough Engineer, Municipal Buildings, Poole. Deposit £2 2s. Tenders by November 20.

**Poole, Dorset.**—Branksome Chine promenade soil sewerage, the construction of 520yd. of 6in. sewer, 330yd. of 4in. spun iron rising main and ancillary works. Documents from the Borough Engineer, Municipal Buildings, Poole. Deposit £2 2s. Tenders by Nov. 21.

**Poole, Dorset.**—Stage III extensions, Broadstone sewage works, contract 7, for B.C. Deposit £10 10s. Tenders by December 13.

**Pwllheli, Caerns.**—Sewerage scheme, contract 108/A2, for B.C. Deposit £5 5s. Tenders by December 11.

**Ross and Cromarty.**—Construction of approximately 1,000yd. of 6in. fireclay sewers, with ancillary works, at Coulregain, Bayble and Tolsta, in the Parish of Stornoway, for C.C. Documents from the County Water Engineer, Burn Place, Dingwall. Arrangements have been made to show intending offerors over the site of the works on Nov. 21. Tenders by Nov. 30.

**Stoke-on-Trent, Staffs.**—Reconstruction of Burstow high level sewer canal crossing, for City Council. Deposit £5. Tenders by December 6.

**Warmley, Glos.**—Extension of surface water sewer, Parkwall, Cadbury Heath, for R.D.C., comprising the laying of approximately 134 lin. yd. of 30in. and 24in. diameter concrete tubes. The construction of two brick manholes and ancillary works. Documents from the Engineer and Surveyor, Council Offices, Warmley House, Warmley. Deposit £2 2s. Tenders by November 17.

**West Kesteven, Lincs.**—Laying of about 2,750yd. of 6in. and 9in. diameter pipe sewers, and the construction of a sewage disposal works comprising settlement tank, bacterial filter 56ft. diameter, humus tank,

sludge drying beds and pumping station, etc., at Ancaster, about eight miles north-east of Grantham, for R.D.C. Documents from Elliott and Brown, council's consulting engineers, Stanley House, Pelham Road, Nottingham. Deposit £5 5s., cheques payable to Council. Tenders by November 24.

#### STREET LIGHTING

**Dartford, Kent.**—Supply and erection of 15 group lighting units, comprising 15ft. tubular steel columns, 80-watt mercury vapour lamps and lanterns, at Temple Hill (site 2c) for B.C. Documents from Thos. Armstrong, town clerk, Council Offices, Dartford. Deposit £2 2s. Tenders by November 28.

**Edinburgh.**—Supply, installation, connecting up and testing of street lighting for Pitreavie Junction, Admiralty Road Flyover and Ferry Toll Junction on the northern approach roads, and for the toll area, car park and Echline Flyover on the southern approach roads now being constructed in connection with the Forth Road Bridge, for the Bridge Joint Board. The installations consist of 200-W and 140-W sodium lamps in cut-off and non-cut-off lanterns mounted at 25ft. and 35ft. height on steel columns, together with some special lighting and illuminated bollards. About 74 lanterns are involved on the northern approach and 114 on the southern approach. Documents from Mott, Hay and Anderson, consulting engineers, 9 Idesleigh House, Caxton Street, London, S.W.1. Tenders by Nov. 20.

**Haughley, Suffolk.**—Supply and erection of 10 lighting units for Parish Council. Tenders by Nov. 23.

**Ipswich, Suffolk.**—Eighty-two group A lighting columns, for B.C. Deposit £1 1s. Tenders by November 27.

**Linlithgow, West Lothian.**—Erection of 37 class B tubular steel lighting columns, together with the supply and erection of lanterns, lamps and gear, for B.C. Documents from James Flett, borough surveyor, Council Offices, 39/41 High Street, Linlithgow. Tenders by November 27.

**Petersfield, Hants.**—Supply and erection of Group A lighting installations as follows, for R.D.C. (1) 36 columns with one bracket together with 26 140 watt sodium lanterns, all ancillary gear and fittings, and wiring of equipment, at London Road, Liphook; (2) 36 columns with 36 140 watt sodium lanterns, all ancillary gear and fittings, and wiring of equipment at London and Portsmouth Roads, Horndean. Documents from G. H. Walker, clerk, The Old College, Petersfield. Deposit £3 3s. Tenders by Dec. 4.

**Tanworth, Staffs.**—Street lighting on trunk road A.453, for B.C. Tenders by November 20.

**Wales.**—Supply of steel lighting columns, sodium lanterns, traffic bollards and subway lighting, and for all cabling and electrical installation work on the heads of the Valleys Road (section 1, Brynmawr to Abergavenny), for the Ministry of Transport. Applications to Rendel Palmer and Tritton, consulting engineers, 125 Victoria Street, London, S.W.1, by noon, November 21.

**Workshop, Notts.**—Supply and erection of 217 lighting units, for B.C. Deposit £3 3s. Tenders by November 27.

#### AWARDS

#### BUILDING AND DECORATING

(See also Housing Schemes)

**Accrington, Lancs.**—Provision of toilet and storeroom accommodation at the crematorium, for B.C.—P. McNicholas, 66 Princess Street, Accrington, £929 (recommended, subject to using stone supplied by the Corporation).

**Belfast.**—Erection of a new studio block in Ormeau Road, for Ulster Television, Ltd. F. H. Kerr and Co., 81 Ladas Drive, Belfast. Anthony F. Lucy and Co., architects, Lombard Chambers, 13 Lombard Street, Belfast, 1; Roe Stevenson and Sons, quantity surveyors, 33 College Gardens, Belfast, 9; Marryat and Place, electrical consultants, P.O. Box 55, 40 Hatton Garden, London, E.C.1 and Rosser and Russell, Ltd., Queens' Wharf, Queen Caroline Street, Hammersmith, London, W.6, are the heating, ventilating and mechanical engineers. Estimated cost £50,000.

**Bedley, Kent.**—Provision of additional accommodation at Westwood County Secondary School, for B.C.—W. J. Eaglen, Ltd., 6 Dorset Road, London, S.E.9, £29,403 (recommended).

**Birmingham.**—Following for the Regional Hospital Board: Provision of partitioning and doors in B block, supply and laying of rubber and linoleum flooring to wards B1, B2 and B3, exterior painting of E and F blocks and interior painting of B block at

Highcroft Hospital—Holoplast, Ltd., 2 Caxton Street, London, S.W.1, £2,981, Furnishings and Flooring (Wolverhampton), Ltd., 35 Berry Street, Wolverhampton, £2,692 and David Charles, Ltd., 45 Green Lane, Birmingham, 9, £2,083 and £1,780 respectively; retiling of roofs at Moneyhull Hospital—R. J. and T. Wormell, Ltd., 141 Brandwood Road, Birmingham, £1,882; exterior painting at Middlefield Hospital—T. C. Brennan, 41 Castleford Road, Birmingham, 11, £1,150; redecoration of nurses' home at the Birmingham and Midland Eye Hospital and Burcot Grange Hospital, Blackwell—Harris and Sheldon, Ltd., College Road, Birmingham, 22B, £2,204 and £1,541; redecorations at the Skin Hospital and alterations to ward B10 and decorations of wards B4, B5, B10 and C8 at Dudley Road Hospital—G. Stublings, Ltd., Streetly Road, Birmingham, 23, £1,072 and £2,342; redecorations at Heathfield Road Maternity Hospital and redecorations and interior decorations at Marston Green Maternity Hospital—W. Juggins and Co., Ltd., Carpenters Road, Birmingham, 19, £1,015, £2,094 and £2,294; brickwork repairs to patients' reception, porters' quarters and dispensary and interior decorations U and U1 block, etc., and M and N block, etc., at Summerfield Hospital—J. Wormell (Roofing), Ltd., Hobmoor Road, Birmingham, 25, £1,545 and A. Seers and Sons, Ltd., 164 Broad Street, Birmingham, £2,951; painting and brickwork repairs to sisters' home and redecoration of maids' home at Dudley Road Hospital—Sargent Bros. (Builders and Decorators), Ltd., 23 Gerrard Street, Birmingham, 19, £5,258 and £2,150; re-laying corridor floors in rubber tiling at Selly Oak Hospital—Charles Hunter, Ltd., Diamond Works, Upper Villiers Street, Wolverhampton, £2,852; new floor covering in wards B5 and B5a and floor finishes blocks D, M and N and ward B3 at Summerfield Hospital—Limmer and Trinidad Lake Asphalt Co., Ltd., Trinidad House, Coventry Street, Birmingham, 5, £1,876 and £4,020 (recommended).

**Birmingham.**—First phase of the new college of arts and crafts at Gosta Green, for E.C. This stage provides for four- and five-storey buildings surrounding a paved court and ornamental pool. In a later stage a 17-storey block is to be built. A. G. Sheppard Fidler, City Architect.—Direct Labour, £694,171.

Erection of a building in Suffolk Street and Bear Street, for the Central Motor Co. (Birmingham), Ltd.—T. Elvins and Sons, Ltd., Soho Hill, Birmingham, 19, estimated cost £54,000. Hurley Robinson and Son, architects, Norfolk House, Smallbrook (Ringway) and Oswald Wainwright and Partners, quantity surveyors, 63 Temple Row, Work just commenced.

**Bishop Auckland, Dur.**—Extensions to the junior training centre, Murphy Crescent, for C.C.—T. Manners and Sons, Ltd., Peel Street, Bishop Auckland, £7,805.

**Bishop Auckland, Dur.**—Renewal of floors at Girls' Grammar School for C.C.—E. and A. Nelson, Laburnum Avenue, Durham, £4,164 (recommended).

**Brighton, Sussex.**—Erection of shops with offices over at 104-109 Queen's Road, for Thames Estates and Investments, Ltd. T. Mortimer Burrows and Partners, architects, 44 Bedford Row, London, W.C.1—William Willet, Ltd., Sloane Square, London, S.W.1. Work has commenced.

**Bristol.**—Warehouse at Yate, for Parnall (Yate), Ltd.—John Laing and Son, Ltd., Mill Hill, London, N.W.7.

**Bromsgrove, Warks.**—Improvements to kitchen at Lea Hospital, for the Birmingham Regional Hospital Board—James Ward (Worcester), Ltd., Broad Street, Worcester, £1,507 (recommended).

**Bury St. Edmunds, Suffolk.**—Building work for linking nurses' home to main heating system at West Suffolk General Hospital—Bright Bros. (Tuddenham), Ltd., Mildenhall, £4,362 (recommended).

**Camberley, Surrey.**—Repairs, redecorations and installation of immersion heaters at police houses at 71 and 75 Park Road, 43 Frimley Road, 210 and 212 Gordon Road and 2 and 4 Caesars Camp Road, for C.C.—Bruce Atkins, 80 Badshot Lea, Aldershot, Hants, £1,505 (recommended).

**Cambridge.**—Erection of primary school, Arbury Road North, (stage 1, junior department), for City Council, comprising nine classrooms, assembly hall, dining hall, kitchen, administrative and staff rooms, boiler house and lavatories, and including external works in roads, paths, cycle shelters, playgrounds, fencing, boundary walls and gates, and provisionally a caretaker's cottage and small swimming pool. T. V. Burrows, city engineer and surveyor—Kidman and Sons, Ltd., 62-66 Victoria Road, Cambridge, £74,009. Work commencing shortly.

**Chatham, Kent.**—Erection of the St. John Fisher School for the Southwark Diocesan Schools Commission—Matthew James and Co., Ltd., 15 Thayer Street, London, W.1, estimated cost £235,000. David Stokes and Partners, 5 Cochrane Street, London, N.W.3, are the architects and Davis Belfield and Everest, 9 Ashley Place, London, S.W.1, are the quantity surveyors for the scheme.

**Chichester, Sussex.**—Provision of Weatherall Nuraphalte roofing at Chichester, Lancastrian School, for West Sussex C.C.—The Weatherall Roofing Co., Ltd., Whitehall Place, Gravesend, Kent.

**Corringham, Essex.**—Pavilion in Laingspan construction at Herd Lane, for Mobil Oil Co., Ltd.—John Laing and Son, Ltd., Mill Hill, London, N.W.7.

**Coventry, War.**—Phase 4 A.D. of the construction of the Lanchester College of Technology, for City Council.—W. H. Jones and Son, Ltd., Lockhurst Lane, Coventry, £650,000. Plans are by the City architect, Arthur Ling and the structural engineer is Granville Berry, City engineer. Work just commenced.

**Coventry.**—Following for the Birmingham Regional Hospital Board: Provision of dental department, hospital administrative office and redecoration and washing down at Coventry and Warwickshire Hospital—A. Matts and Son, Ltd., Vecqueray Street, Coventry, £17,873, Whiteman and Son, Ltd., 73 Foleshill Road, Coventry, £17,877 and R. Poulton, 109 Evenlode Crescent, Coventry, £3,546 respectively; redecoration and washing down at Gulson, Whitley and Keresley Hospitals—Likerealm, Ltd., £2,195, £1,751 and £2,680 respectively (recommended).

**Dagenham, Essex.**—Following for B.C.: Felt roofing to new transport workshops—Stamford Asphalt Co., Ltd., 6 Linthorpe Road, London, N.16, £726 (recommended).

First extension block to Civic Centre and adaptations to existing building—Direct Labour, £126,187 (recommended); F. R. Hipperson and Son, Ltd., £137,538; Allen Fairhead and Sons, Ltd., £144,513; Richard Costain, Ltd., £149,707.

**Dudley, Warks.**—Reflooring children's ward at the Guest Hospital and exterior and interior repainting at The Limes Sanatorium, for the Birmingham Regional Hospital Board—Leyleand and Birmingham Rubber Co., Ltd., Phoenix Chambers, 84 Colmore Row, Birmingham, 3, £1,448 and A. H. Guest, Ltd., Coalbourne Brook, Stourbridge, £2,240 respectively (recommended).

**Durham.**—Following for C.C.: Renewal of floors at Brooms R.C. (aided) School and at St. Godric's R.C. (aided) School—E. and A. Nelson, Laburnum Avenue, Durham, £819 and £1,240 respectively; conversion of schoolhouse to s.a.froom and ancillary rooms at Benfieldside Modern School—H. Ayton and Sons, Ltd., Blackhill, £995; renewal of floors at Brownay County School—D. Lax (Builders), Ltd., Woodfield Hill, Crook, £2,197; renewal of floors at Colley County and Modern Schools—J. Simpson, 35 Manor Grange, Lancaster, £3,767; repairs and renewal of floors at Shield Row Girls' Modern School—E. and A. Nelson, Durham, £1,145 (all recommended).

**Edinburgh.**—Gracemount Primary School, transportable classrooms, toilet accommodation and the site works for City Council. Geo. L. Walls and Partners, architects, 14 Great King Street—S.G.A. (Timber Buildings), Ltd., 591 Nitshill Road, Glasgow, C.5 and Geo. Rae and Co., 4 Gayfield Square, Edinburgh, £24,000. Work commencing this month.

**Ellesmere Port, Cheshire.**—Conversion to fireplaces, etc., in 31 houses at Princes Road, for B.C.—Norman Roberts, Borough Architect—T. Warrington and Sons, 82 Station Road, Ellesmere Port, £740.

**Essex.**—Erection of (a) Leaden Rodin fire station and (b) Weeley fire station, for C.C. H. Conolly, County architect—(a) H. J. Smith (Ongar), Ltd., Ongar, Essex, £7,441 and (b) Norman and Gardner, Ltd., St. Osyth, near Clacton-on-Sea, £7,688. Work about to commence.

**Farnham, Surrey.**—Repair and redecoration of police houses at 16 Upper Hale Road, 31 Tilford Road, Greenfield Road, 60 Lynch Road and 74 and 76 Shorthorn Road, for C.C.—Brockway and Son, Ltd., 48 West Street, Farnham, £990 (recommended).

**Felling, Dur.**—Improvements to sanitation at Felling County School, for C.C.—D. Glen, Ltd., 84 Albert Street, Jarrow, £5,387 (recommended).

**Frimley, Surrey.**—Repairs, redecorations and installation of immersion heaters at police houses at 5, 7 and 9, 161 and 163 Frimley Green Road and 39 Mytchett Road, Mytchett, for C.C.—Bruce Atkins, 80 Badshot Lea, Aldershot, Hants, £1,013 (recommended).

- Gloucesterhire.** — Construction of a precast prestressed concrete secondary modern school (using the Intergrid system) at Wootton-under-Edge, for C.C.—Gilbert-Ash, Ltd., 2 Stanhope Gate, London, W.I., £150,000. Work about to commence.
- Godstone, Surrey.** — Repair and redecoration of police houses at 10-18 Ivy Mill Close and Traffic Centre, for C.C.—Allman and Son (Redhill), Ltd., 159 London Road, Redhill, £1,602 (recommended).
- Harlow, Essex.** — Supplying and fixing of Nuraphalte roofing to new houses at area 74, Great Pardon and Wyke Elm, Town Centre, for Development Corporation—Weatherall Roofing Co., Ltd., Whitehall Place, Gravesend, Kent.
- Harrogate, Yorks.** — Supply and erection of a steel structure with asbestos roof at Rudfarlington Farm, for B.C.—Teasdale and Metcalfe, Ltd., 26 North Street, Wetherby, £1,398 (recommended, subject to Ministry of Agriculture and Fisheries and Food).
- Harrogate, Yorks.** — Erection of office block at Victoria Avenue, for Shop and Store Developments, Ltd., Samuel Jackson and Son, architects, Ocean Chambers, Piccadilly, Bradford, 1—Fowlers (Contractors), Ltd., Camwal Road, Harrogate.
- Hartlepool, Dur.** — Extensions and renewals to showers at Henry Smith School, for C.C.—J. Douglas and Son, The Letch Southside, Easington Village, £1,257 (recommended).
- Hawkinge, Kent.** — Provision of Weatherall Nuraphalte roofing at new kitchen at the County Primary School, for C.C.—The Weatherall Roofing Co., Ltd., Whitehall Place, Gravesend.
- Hornsey, Middx.** — Erection of a public mortuary at the Central Depot, for B.C.—Ives and Co. (Contractors), Ltd., 78 Kensington High Street, London, W.8, £22,248 (recommended, subject to Ministry approval).
- Houghton-le-Spring, Dur.** — Following for C.C.: erection of a new remand home at Penshaw together with provision of staff quarters and other accommodation in Penshaw House—O. P. Docherty and Son, Sunderland, £61,517; relaying floors of kitchen and preparation room at Heath House Hostel—R. D. Harrison, Ltd., 1 William Street, Houghton-le-Spring, £1,045.
- Houghton-le-Spring, Dur.** — Repairs, renewal of floors and windows and new entrances at New Herrington County and Modern Schools, for C.C.—E. and A. Nelson, Laburnum Avenue, Durham, £1,633 (recommended).
- Ilford, Essex.** — Following for B.C.: Provision of a new assembly hall and ancillary accommodation at Gearies Infants School and an enlarged hall at Gearies Junior School—S. G. Cobban, Ltd., 6 Birbeck Road, Ilford, £17,990; flooring at Beal Grammar School for Girls—S. Bennett and Sons (Flooring), Ltd., Tyne Hall, Hainault Street, Ilford, £1,405; Fairlop Lake boathouse and sailing centre—Coulter and Reynolds, Ltd., 59 Court Way, Colindale, N.W.9, £8,493; shops and offices at Ilford Broadway stage II (north side)—Hammond and Miles, Ltd., Scrutton Road Works, Scrutton Road, Ilford, £80,680 (recommended).
- Jarrow, Dur.** — Renewal of floors at Grange County School for C.C.—E. and A. Nelson, Laburnum Avenue, Durham, £2,125 (recommended).
- Kidderminster, Worcs.** — Interior redecoration at the General Hospital and modernisation of wards 10-13 at Blakebrook Hospital, for the Birmingham Regional Hospital Board—Mastercrafts Builders, Ltd., £1,675 and Bowes Building Co., Ltd., 51 Willow Road, Bromsgrove, £8,155 respectively, (recommended).
- Lancing, Sussex.** — Erection of showrooms, a workshop and filling station at 339-345 Brighton Road, for S. J. Middleton and Co., Ltd.—A. H. Porter (Shoreham), Ltd., 28 Kings Walk, Shoreham Beach, estimated cost £70,000. L. H. Fewster and Gamble, 5a Liverpool Gardens, Worthing, are the architects, and G. C. Winton, 44 High Street, Findon, near Worthing, is the quantity surveyor for the scheme. Demolition work has just commenced.
- Leamington Spa, War.** — Repairs and redecorations to Leigh and Jephson Wards at Warneford Hospital, for the Birmingham Regional Hospital Board—E. H. Burgess, Ltd., 61 Warwick Street, Leamington Spa, £1,226 (recommended).
- Leeds.** — Following for City Council: Erection of public conveniences on a site in Dewsbury Road and at the junction of Stonegate Road and Scott Hall Road—J. Tomlinson and Son, Ltd., Globe Works, Bath Road, Leeds, 11, £5,405 (recommended).
- Erection of 18 shops with maisonettes above and 12 garages at Ebor Gardens and Charing Cross.—N. B. Bell and Co., Ltd., Frankland Terrace, Leeds, 7, £99,840 (recommended, subject to Ministry approval).
- Shop fronts, fascia and blinds for the Lincoln Green Shopping Centre—Pickering Shopfitters, Ltd., Macauley Street, Leeds 9, £6,201 (recommended).
- Erection of Seacroft branch library—West and Sons (Leeds), Ltd., Hughenden Rooms Lane, Morley, £4,720.
- Leicester.** — Construction of a five-storey building (25,000 sq. ft.) in reinforced concrete on site of the Essoldo Cinema, Granby Street and an arcade of 22 lock-up shops on the Royal Opera House site at junction of Silver Street and Cork Street, for the E. Alex Coleman Group of Companies. H. Owen Luder, architect, 79 Regency Street, London, S.W.1.—Sir Robert McAlpine and Sons, Ltd., 80 Park Lane, London, W.I. Estimated cost £85,000 and £70,000 respectively.
- Liverpool.** — Following for City Council: Supply and erection of an extension to the existing corridor at Greenhill Nursery—R. Halliday and Co., Ltd., Royal Horticultural Works, Middleton, Lancashire, £1,969; extensions at Sudley Road County Primary School—Rimmer Bros. (Liverpool), Ltd., South Parade, Speke, Liverpool, £21,970 (recommended).
- Erection of the new teaching accommodation at C. F. Mott Training College—R. J. Barton and Sons, Ltd., Formby, £171,885 (recommended, subject to M.E. approval).
- London.** — Internal repainting and stone cleaning of the front elevation at Billingsgate Market, for City Corporation—Alfred Bagnall and Sons, Ltd., 106 High Street, Teddington, Middx, £8,492 (recommended); T. H. Kenyon and Sons, Ltd., £12,552; W. J. Brooker, Ltd., £12,533; W. G. Beaumont and Son, £10,240; C. and T. Painters, Ltd., £9,936; James Robb and Son, Ltd., £9,425.
- Luton, Beds.** — Erection of a public house at the junction of Bramingham Road and Watermead Road, Limbury Mead, for Flowers Breweries, Ltd.—H. C. James, Ltd., Luton, estimated cost £21,000. W. E. Edleston is the staff architect and Lemon and Blizard, 59 Tufton Street, London, S.W.1, are the quantity surveyors. Work has commenced.
- Luton, Beds.** — Erection of Civil Defence headquarters and control centre, for B.C.—Welwyn Builders, Ltd., Mundells, Welwyn Garden City, Herts. £34,053 (recommended, subject to Home Office approval).
- Malvern Wells, Worcs.** — Interior decoration of eight ward blocks and steam kitchen and block O at St. Wulstan's Hospital, for the Birmingham Regional Hospital Board—Martin Wilesmith (Contractors), Ltd., Somers Park Avenue, Malvern, £4,840 and Goodwin and Hammatt, Ltd., 11 Bank Street, Worcester, £1,013 respectively (recommended).
- Manchester.** — Following for City Council: composition block flooring for extensions at Didsbury Training College—Stonewood Flooring Co., Ltd., Alfreton, metal windows and curtain walling to extensions at Elizabeth Gaskell College—George Wragge, Ltd., Mancheser; flooring at Whitebrook School for the Deaf—Fitchett and Woolacott, Ltd., Popham Street Works, Nottingham; alterations at Lily Lane School, Moston—D. Glendinning, 112 Wood Street, Bury; alterations at Mansfield Lodge, Whalley Range, to provide additional temporary accommodation for Bishop Bilsborrow Memorial R.C. School—Peter Coulon, Ltd., Manchester (all recommended).
- Mansfield, Notts.** — Provision of a basement under the proposed workshop block at the Waterworks, for B.C.—Adkin and Wild, Ltd., 1a Oxford Street, Sutton-in-Ashfield, £1,643 (recommended).
- Nelson, Lancs.** — Repairs and improvements at 2 Edgar Street, for B.C.—Direct Labour, £1,129 (recommended).
- Newcastle upon Tyne.** — Erection of a new refectory and student's union extension at King's College, for King's College Council. Raelan Squire and Partners and William Whitefield, architects, 3 Hobart Place, London, S.W.1.—John Laing Construction, Ltd., Dalston Road, Carlisle. Estimated cost £600,000. Work commenced.
- Newcastle upon Tyne.** — Conversion of the Plaza Cinema, West Road, into shops, etc., for Howardgate Holdings, Ltd.—Richard Costain, Ltd., 111 Westminster Bridge Road, London, S.E.1.
- North Riding.** — Erection of County modern school, Airy Hill, Whitby West, for C.C.—John Laing and Son, Ltd., Dalston Road, Carlisle.
- Nottingham.** — Six shops with dwelling accommodation at the junction of Cherry Orchard Mount and Amber Hill on the Bestwood Park estate, for City Council—Thomas Bow,
- 45 Lamartine Street, Nottingham, £35,485 (recommended).
- Nuneaton, War.** — Redecoration and washing down at George Eliot Hospital, for the Birmingham Regional Hospital Board—H. Castledine, 3 Woodshires Road, Longford, Coventry, £1,468 (recommended).
- Ossett, Yorks.** — Alterations and modernisation of six cottages for Wray's Homes Trust. J. K. Garlick, borough surveyor—G. Moorhouse, Ivy Bank, Ryecroft Street, Ossett, £1,460.
- Oswestry, Salop.** — Repairs to roofs at Oswestry and District Hospital, for the Birmingham Regional Hospital Board—W. Watkin and Co., Ltd., 18 Oswald Road, Oswestry, £4,657 (recommended).
- Petersfield, Hants.** — Improvement works to 38 council houses at Liss and at Liphook, for R.D.C. N. P. Scott, engineer and surveyor—F. J. Knight, 22 Chapel Street, Petersfield, £10,562.
- Poplar.** — Conversion of chutes 1 and 2, Northumberland Wharf, and the reinforced concrete work for the erection of public conveniences at Sutherland Road, for B.C.—Thomas W. Hughan and Co., Ltd., Point Wharf, Tunnel Avenue, London, S.E.10, £1,315, and Helical Bar and Engineering Co., Ltd., 30 Albert Embankment, London, S.E.1, £1,249 respectively (recommended).
- Port Sunlight, Ches.** — Following works for Lever Brothers, Port Sunlight, Ltd.; Erection of new works laboratory. Design work and quantity surveying by Civil Engineers Department, Unilever Merseyside, Ltd.—Holland & Hannen and Cubitts (North Western), Ltd., New Chester Road, Wirral. New canteen—W. E. Pond and Sons, Ltd., 49 Church Street, Ellesmere Port.
- Ross-on-Wye, Herefs.** — Interior painting at Alton Street Hospital, for the Birmingham Regional Hospital Board—Goodwin, Greenway and Co., Ltd., Barton Road, Hereford, £1,410 (recommended).
- Rusby, War.** — Redecoration and washing down at the Hospital of St. Cross and St. Luke's Hospital, for the Birmingham Regional Hospital Board—Likerealm, Ltd., £2,845 and £1,401 respectively (recommended).
- Rugeley, Staffs.** — Extension to the Rugeley Mortuary, for U.D.C. B. M. Rollinson, engineer and surveyor—G. F. Bradbury and Co., High Street, Abbotts, Bromley, £2,637 (accepted); Cannock Construction Co., £3,331; Barlens Co., £2,640.
- Rutherford, Lanarks.** — Erection of a public convenience at Castle Street, for B.C.—John C. Russell, Burgh Surveyor—J. Dickie and Sons, Ltd., Parklands Road, Glasgow, £5,280.
- Seaham, Dur.** — Renewal of wood floors at County School for C.C.—J. Douglas and Son, The Letch Southside, Easington Village, £978 (recommended).
- Sheffield.** — Following for City Council: Erection of a new fire station at Mansfield Road—William Drabble and Sons, Ltd., Mosborough, Eckington, Sheffield, £52,051; erection of a lecture and recreation room above the A.F.S. garage at the Central Fire Station, adapt certain farm buildings at Greenhill Hall Farm for use at district depot in connection with the maintenance of properties in the Greenhill and Today areas, conversion of the wholesale fish market for use by the retail horticulturists, provision of garage accommodation and demolition of caretaker's house at the Johnson Memorial Home and works of adaptation, etc., at the Johnson Memorial Home for establishment of a training centre for home helps at the home—Direct Labour (recommended). Estimated cost £3,479, £7,500, £1,000, £3,300 and £4,416 respectively.
- Additional works at the Park Hill estate including the provision of safety handrails on the roofs and guard rails to prevent unauthorised access to the roofs—Direct Labour (recommended, subject to Ministry approval). Estimated cost £6,800.
- Alterations to the North East corner of the new cattle market building—Wm. Moss and Sons, Ltd., Castle Market, Sheffield, 1, £1,572 (extension of contract, recommended).
- Shildon, Dur.** — Canteen scullery at Timothy Hackworth County Junior Mixed School, for C.C.—W. Wiggin and Son (Builders), Ltd., Sunderland, £1,537 (recommended).
- Southend-on-Sea, Essex.** — Provision and erection of additional screening and pay box at western end of the former pier pavilion site, for B.C.—Abacus Engineering, Ltd., Sutton-in-Ashfield, Notts, £2,667 (recommended, extension of contract).
- Stratford-upon-Avon, War.** — Redecorations, etc., to Churchill Ward at Stratford-upon-Avon Herald, for the Birmingham Regional Hospital Board—E. H. Burgess, Ltd., 61 Warwick Street, Leamington Spa, £1,557 (recommended).

**Stoke-on-Trent, Staffs.**—Erection of a College of Art at Shelton for E.C.—J. Kelly (Stoke-on-Trent), Ltd., Corporation Street, Stoke-on-Trent, £131,000 (recommended).

**Sunderland, Dur.**—Additional accommodation at South Hylton County School, for C.C.—Gregory (Hedgerley), Ltd., Hedgerley, Slough, £2,345 (recommended).

**Surrey.**—Repainting Teddington Lock Footbridge and Teddington Suspension Bridge and structural repairs to the south pier at the suspension bridge, for C.C.—T. H. Kenyon and Sons, Ltd., Chancellors Works, Croxley Road, London, W.9, £592 and John Shelbourne and Co., Ltd., Battlebridge House, Tooley Street, London, S.E.1, £988 respectively (recommended).

**Tenbury Wells, Wors.**—Interior redecoration and minor repairs at Tenbury and District Hospital, for the Birmingham Regional Hospital Board—John McGrath, Macross, Bromyard Road, Tenbury Wells, £1,754 (recommended).

**Ulverston, Lancs.**—Erection of Croftlands School, Oakwood Drive, for C.C.—John Laing and Son, Ltd., Dalston Road, Carlisle.

**Warwick.**—Repairs and redecorations to block A at Central Hospital, Hatton, for the Birmingham Regional Hospital Board—T. Nicholson (Leamington), Ltd., 24 Regent Street, Leamington Spa, £1,284 (recommended).

**Wednesbury, Staffs.**—Erection of new factory for J. Nesbit-Evans and Co., Ltd. (West of England sack holdings, Ltd.)—Wilson Lovatt and Sons, Ltd., Clarence Street, Wolverhampton. Estimated cost £90,000. R. G. Harrison, group architect, Chisholm, Fox and Garner, Ltd., Orchard Maltings, Sawbridge Works, Herts, and C. G. Croft, quantity surveyor, 1 St. Georges Place, York. Work commencing Nov. 14.

**Weybridge, Surrey.**—Repair and redecoration of police houses at 27, 28, 31, 33, 35 and 37 Pine Grove and 59 and 61 Hanger Hill, for C.C.—Clarke Bros. (Surbiton), 1a Alpha Road, Surbiton, £1,332 (recommended).

**Woking, Surrey.**—Repair and redecoration of five police houses at Oriental Road, for C.C.—G. Everett, Woking, £977 (recommended).

**Wolverhampton, Staffs.**—Plastering wall surfaces of corridors and staircases at New Cross Hospital, for the Birmingham Regional Hospital Board—A. M. Griffiths and Son, Ltd., Thomas Street, Wolverhampton, £1,670 (recommended).

**Woolwich.**—Erection of 18 garages at Belsen Road/Kingsman Street, St. Mary's C.D.A., for B.C.—Direct Labour (recommended, subject to Ministry approval), estimated cost £5,962.

**Worcester.**—Exterior painting of nurses' home, etc., at Royal Hospital, for the Birmingham Regional Hospital Board—Joseph Wood and Sons (Worcester), Ltd., Gregory's Mill Street, Worcester, £1,045 (recommended).

**Worthing, Sussex.**—Modernisation of 1, 2 and 3 Hill Barn Lane, for B.C.—Cheal and Sons, Ltd., Worthing, £1,507 (recommended).

#### CLOTHING AND TEXTILES

**Southend-on-Sea, Essex.**—Supply of uniform clothing and drill jackets, for Transport Committee—Wathen, Gardiner and Co., Staple Hill, Bristol, £4,864 and Ellis Overalls Ltd., £610 respectively (recommended).

#### DEMOLITION

**Chester.**—Demolition of property in Henry Street and Lyon Street, for City Council—Engineers (Ruabon), Ltd., 45 King Street, Wrexham, £1,090 (recommended).

**Hertford.**—Demolition of Birchley Green omnibus station and car park, additional car parking areas at rear of Dimsdale House and Civil Defence Headquarters, for B.C.—F. W. Potts, 315 Hayling Road, South Oxhey, £450 (recommended); W. R. Gough, £550; R. Perring and Midson, £750.

**Heston and Isleworth, Middx.**—Demolition of 19-35 (odd) and Isleworth Blue School, North Street, 6-28 (consecutive) Percy Gardens and 22-26 (even) South Street, Isleworth, for B.C.—Thornton, Brown and Co., Thames Ditton, Surrey, £110 (recommended).

**Heywood, Lancs.**—Demolition of printing works at Church Street/Hartley Street, for B.C.—T. B. Tomlinson, Schofield Street Works, Heywood.

**Ilford, Essex.**—Demolition of properties in the Stanley and Pelham Road area, for B.C.—Knifton Transport, Ltd., Langhedge Lane, London, N.18, £167 (recommended).

**Manchester.**—Demolition of "Briarfield" and "Sandycroft", Altringham Road, Baguley, for City Council—Robert Walker (Haulage), Ltd., Wythenshawe (recommended).

**Mansfield, Notts.**—Demolition of 70 and 72 Rosemary Street, 14, 15, 16 and 17 Plantation Row, warehouse rear of 64

Stockwell Gate and workshop, etc., Stockwell Gate, rear of Kings Head public house, for B.C.—L. O'Neill, 73 Station Road, Ilkley, Derbyshire, £630 (recommended).

**Plymouth.**—Demolition at Budshead farmhouse, Ernesettle, telephone manager's office wing at Princess Street and the old Labour Exchange at Breton, for City Council—Direct Labour (recommended). Estimated cost £795, £2,042 and £1,760 respectively.

**Tunbridge Wells, Kent.**—Demolition of various properties for B.C.—De Marco (Demolition and Excavations), Ltd., 64 Birchanger Road, London, S.E.25, £937 (recommended).

**Walthamstow, Essex.**—Demolition of 48 and 50 Oxford Road, 1/7 and 11/13 Grosvenor Park Road, 30/44 and 61/63 Wingfield Road and Factory Premises at Grosvenor Rise East, and 281, 283 and 285 Higham Hill Road, for B.C.—W. H. Penfold and Son, Ltd., Belmont Grove, Belmont Hill, London, S.E.13, £1,108 and £415 respectively (recommended).

**Woolwich.**—Demolition of "The Oaks," Burgrave Road, 2-6 Samuel Street, 86, 87 and 88 Beresford Street, 11-18 Belson Road, and 7-16 Marshall's Grove, for B.C.—J. W. Dove (Demolition), Ltd., £882 (accepted); E. W. Spears and Co., Ltd., £1,245; W. H. Penfold and Sons, Ltd., £1,293; A. Penfold and Sons, Ltd., £1,480; Gorst and Co., Ltd., £1,880; P. E. Selby, Ltd., £1,885; Charles Griffiths, Ltd., £2,165.

**Worthing, Sussex.**—Completion of the demolition of buildings on the Grafton House site and adjoining sites, for B.C.—Hall and Co., Ltd., Victoria Wharf, Croydon, Surrey (recommended).

#### ELECTRICAL

**Beddington and Wallington, Surrey.**—Electrical rewiring of 112 pre-war properties at Richmond Road, Wandle Road and Millars Orchard estate, for B.C.—M. and B. Electrical, Ltd., 42 Dingwall Road, Croydon, £3,830 (recommended).

**Birmingham.**—Following for the Regional Hospital Board: provision of bed lift for St. Chad's Hospital—Maryatt and Scott, Ltd., 41 Water Street, Birmingham, 3, £4,870; electrical rewiring at Burcot Grange Hospital, Blackwell and the Birmingham and Midland Eye Hospital—Midlands Electricity Board, £4,091 and Dale Electric Contractors (Birmingham), Ltd., 25 Bristol Road, Birmingham, 5, £17,853 respectively (recommended).

**Bolton, Lancs.**—Provision and installation of two electric passenger lifts for blocks 8, 9 and 10 at School Hill, for B.C.—Express Lift Co., Ltd., 373 Corn Exchange Buildings, Manchester, 4 (recommended).

**Bromsgrove, Wors.**—Rewiring work at Blackwell Recovery Hospital, for the Birmingham Regional Hospital Board—H. W. Osborne, Lombard Street, Stourport, £5,966 (recommended).

**Dagenham, Essex.**—Rewiring of dwellings at Central Park estate, for B.C.—Evans and Shea, Ltd., 21 Victoria Road, Romford, £16,135 (recommended).

**Doncaster, Yorks.**—Construction of No. 2 turbo-alternator block and No. 2 boiler feed pump block at the Thorpe Marsh Power Station, for the Central Electricity Generating Board (Northern Project Group)—Mitchell Construction Co., Ltd., Peterborough, £92,000. Work to commence Jan. 1.

**Liverpool.**—Repairs, including major renewals, to lift at City Laboratories, Mount Pleasant, for City Council—Electro Lifts, Ltd., Joseph Street, Bradford, 3, £1,340 (recommended).

**Luton, Beds.**—Electrical rewiring of 26 houses at Cannon Lane, for B.C.—J. and J. Burtnshaw and Partners, Ltd., Luton, £871.

**Manchester.**—Following for City Council: Maintenance of traffic control signals at Kingsway/Wilmslow Road and conversion and subsequent maintenance of fixed time traffic signals to vehicle actuated signals at Wilmslow Road/Barlow Moor Road/School Road junction—Automatic Telephone and Electric Co., Ltd., Manchester.

Electrical installation for re-organisation of fourth floor of central library—Electrical Contractors (Manchester), Ltd., 88 Mosley Street, Manchester, 2; supply and erection of service lift at Ducie Technical High School—J. and E. Hall, Ltd., 9 Lower Mosley Street, Manchester, 2; passenger lifts at St. John's College of Further Education—Otis Elevator Co., Ltd., 28 Oxford Street, Manchester, 1; electrical installation at Openshaw College of Further Education—Sadler and Kinsey, Ltd., 62 George Street, Manchester, 2 (all recommended).

**Salford, Lancs.**—Following for City Council: Electrical installation for modifications at the Frederick Road transport depot—Piggott and Whithfield, Ltd., 9 Copper Street, Stockport, £32,178; rewiring of the electricity supply system on the Langworthy

estate—North Western Electricity Board, £8,600 (recommended).

**Tenbury Wells, Wors.**—Rewiring of centre block at the Tenbury and District Hospital, for the Birmingham Regional Hospital Board—Whittaker Bros., Ltd., £1,105 (recommended).

#### FENCING

**Chester-le-Street, Dur.**—Creosoted timber fencing at Pelton Modern School, for C.C.—Fencing and Sports Construction Co., Blackwood Sawmills, Felton, £787 (recommended).

**Ilford, Essex.**—Supply and erection of fencing and gate at Fullwell Avenue, for B.C.—Bell and Webster, Ltd., Essex Road, Hoddesdon, Herts., £1,064 (recommended).

**Mitcham, Surrey.**—Supply of 3ft. 6in. high iron railings for Vectis Gardens, for B.C.—Russells Forge and Engineering Co., Ltd., Lower Gornal, Dudley, Wors., £374 (recommended); Samuel R. Walton and Co., Ltd., £400; Hill and Smith, Ltd., £591; T. W. Palmer and Co. (Merton Abbey), Ltd., £630; The Darlington Fencing Co., Ltd., £753.

**Newtownards, Down.**—Following for Sewage Disposal Joint Board: Repair of approximately 315 lin. yd. of damaged fencing, the re-siting of approximately 245 lin. yd. of existing fencing, and supply and erection of approximately 220 lin. yd. protective fencing at Ballyrickard. Works situated approximately three miles from Newtownards. R. Ferguson and S. McIlveen, consulting engineers, 15 College Gardens, Belfast, 9—N. Cameron and Co., Ltd., 8 College Square North, Belfast, 1. Work commenced.

**Shoreditch.**—Supply and erection of fencing and a gate at Britannia Walk Playground, Wenlock Barn estate, for B.C.—Permafence, Ltd., 225 High Street, London, W.13, £520 (recommended).

#### GAS AND WATER SUPPLY

**Barrow-in-Furness, Lancs.**—Construction of a new reservoir in Thornecliffe Road, for the Furness Water Board. B.R.C. Engineering Co., Ltd., consultants—Harbour and General Works, Ltd., St. Stephens House, Victoria Embankment, London, S.W.1, £215,812. Work commenced.

**Staffordshire.**—Tittesworth reservoir scheme (contract 54): Main buildings for water treatment plant for Potteries Water Board, including construction of a reinforced concrete, brick and stone building incorporating clear water pump house, administrative block and chemical house; a reinforced concrete, brick and stone raw water pump house, together with access roads, drainage and ancillary works, at Tittesworth Reservoir, the entrance road to the reservoir being about two miles north of Leek, on the main Leek-Buxton Road, A.53. C. V. Brown, engineer and manager—G. G. Trentham, Ltd., Park Hall, Longton, Stoke-on-Trent.

**Tunbridge Wells, Kent.**—Supply of filtration equipment for the indoor swimming baths, for B.C.—Paterson Engineering Co., Ltd., 129 Kingsway, London, W.C.2 (recommended).

**West Dorset.**—Construction of reinforced concrete service reservoir at Tollier Down for the Water Board. Leonard Fisher, Ltd., Chard, Somerset. L. G. Mouchel and Partners, consulting engineers, Southbank House, Black Prince Road, London, S.E.11 and R. Chapman, engineer and manager to board.

#### HEATING AND VENTILATING

**Birmingham.**—Following for the Regional Hospital Board: enlarging an incinerator heating duct at Selly Oak Hospital—Curra Lewis and Martin, Ltd., 11 Booth Street, Birmingham, 21, £4,580; replacement of heating boiler at Middlefield Hospital—L. E. Jones and Co. (Heating and Plumbing Contractors), Ltd., 351 Stratford Road, Shirley, Solihull, £2,786; installation of high temperature vacuum steriliser in theatre basement at Dudley Road Hospital—Drayton Castle, Ltd., £3,060 (recommended).

**Bury St. Edmunds, Suffolk.**—Mechanical engineering services for linking of nurses' home to main heating system at West Suffolk General Hospital, for the East Anglian Regional Hospital Board—Ashwell and Nesbit, Ltd., Leicester, £8,526 (recommended).

**Coventry.**—Repairs to boiler at Coventry and Warwickshire Hospital, for the Birmingham Regional Hospital Board—Woodwards Engineering and Boilmakers Co., Birdcage, Marton, Rugby, £1,357 (recommended).

**Durham.**—Following for C.C.: alterations and additions to heating installation at the central repair depot, Framwellgate—E.

Dixon Barker and Son, Ltd., Durham, £795; gas fired central heating boiler at Swalwell County School—Co-operative Wholesale Society, Ltd., Newcastle upon Tyne, £1,153 (recommended).

**Hartlepool, Dur.**—Improvements to heating at Baltic Street County School, for C.C.—E. Dixon Barker and Son, Ltd., Charles Street, West Hartlepool, £747 (recommended).

**Newcastle upon Tyne.**—Installation of heating and engineering services, etc., at new refectory block at King's College—Brightside Heating and Engineering Co., Ltd., Sheffield.

**Reading, Berks.**—Installation of heating, ventilation and boiler plant at the Mormon Chapel for the Church of Jesus Christ Latter Day Saints—Brightside Heating and Engineering Co., Ltd., Sheffield. Denkers and Rae, 40 Baker Street, London, W.I., are the architects, and Frederick J. Whyte, 27 Knightsbridge Street, London, E.C.4, is the consulting engineer for the scheme.

**Tunbridge Wells, Kent.**—Supply of heating plant for the indoor swimming baths, for B.C.—G. N. Haden and Sons, Ltd., 7 Tavistock Square, London, W.C.1, £10,170 (recommended).

**Warrington, Lancs.**—Installation of Brightrad radiant strip and unit heaters with fresh air inlets in the distillery of G. and J. Greenall, Ltd.—Brightside Heating and Engineering Co., Ltd., Sheffield.

**Wolverhampton, Staffs.**—Repairs to water tube boiler and Lancashire boiler at New Cross Hospital, for the Birmingham Regional Hospital Board—Babcock and Wilcox, Ltd., Winchester House, Victoria Square, Birmingham, £3,261 and Associated Steels and Tools Co., Ltd., Powlett Street, Wolverhampton, £1,098 respectively (recommended).

#### HOUSING SCHEMES

**Bangor, Caerns.**—Twenty-five flats at Lon Ogwen, Greenwood Avenue and Ffordd Cymal, for City Council—Gregory Housing, Ltd., 21 Farncombe Road, Worthing, £37,867 (recommended).

**Barking, Essex.**—Supply and erection of concrete work for old people's dwellings at Bevan Avenue, for B.C.—Concrete (Southern), Ltd., Green Lane, Hounslow, Middx, £1,939.

**Beddington and Wallington, Surrey.**—Conversion of 155 Woodcote Road into two three-bedroom houses, for B.C.—F. H. Claridge and Son, Ltd., 105 Stafford Road, Wallington, £3,164 (recommended).

**Cemaes, Pems.**—Six houses at Feidfaifach estate, Newport, for R.D.C.—Doolin and

Turner, Glanymor Road, Goodwick, Pembs. Estimated cost £11,556.

**Dagenham, Essex.**—Internal frames, linings and staircases at Oxlow Lane estate, for B.C.—Hollis Bros., Ltd., 150 Holborn, London, E.C.1, £1,585 (recommended).

**Harwich, Essex.**—Following for B.C.: Pair of houses at Brookman's Farm—P. H. Hawks, 418 Main Road, Dovercourt, £5,989; eight flats at King's Head Street—A. Creswell, Ltd., 86 Franks Road, Dovercourt, £21,873 (recommended, subject to Ministry approval).

**Herford.**—Seventy-one dwellings and 52 garages on the Sele Farm housing estate, for B.C.—J. Dixon and Son (Ware), Ltd., Phoenix Works, Star Street, Ware, £184,925 (recommended, subject to Ministry approval); George Mott and Sons, £185,288; Hale Construction Co., Ltd., £185,870; A. T. Chown and Co., Ltd., £187,112; E. S. Moss, Ltd., £188,344; S. and G. Peachey and Son, Ltd., £189,602; Matthew James and Co., Ltd., £197,000; W. J. Simms, Sons and Cooke, Ltd., £202,631.

**Leeds.**—Forty-six flats in one 12-storey block, 28 three-bedroom five-person houses, 34 four-storey maisonettes and 35 garages at Theaker Lane and Beckett Park, for City Council—George Wimpey and Co., Ltd., £251,798 (recommended, subject to Ministry approval).

**Liverpool.**—Following for City Council: 46 dwellings and nine garages at the Mill Lane extension (Olive Mount)—Peak Construction (Liverpool), Ltd., 95 Broad Lane, Liverpool, 11, £109,359; 12 one-bedroom flats and four garages at Devonshire Road/Belvidere Road—John J. Gallagher and Co., Ltd., Birchfield Avenue, Widnes, £22,961.

**Manchester.**—Following for City Council: 281 dwellings at Hadfield, Glossop—Roy and Partners, Ltd., Salford, estimated cost £648,638; 16 four-storey maisonettes at Harpurhey—Cubar Construction Co., Ltd., 1 Clarence Street, Manchester, 2 (both subject to Ministry approval).

**Mansfield, Notts.**—Ten aged persons bungalows at Ravensdale housing estate, for B.C.—W. Hackett, Westfield Bungalow, Radmanthwaite, Pleasance, Mansfield, £15,784 (recommended).

**Mere and Tisbury, Wilts.**—Sixteen Homeville traditional flats and roadworks at White Road, Mere, for R.D.C.—A. Hammand and Son, Ltd., Sturminster Newton, Dorset, and Road Construction (Contracting), Ltd., Frome, respectively.

**Morley, Yorks.**—Twenty bungalows (contract 1) and 10 houses (contract 2) at Nepshaw Lane estate, for B.C.—E. Rhodes, 23 High

Street, Morley, £25,035 and T. Madden, Ltd., Lewisham Lodge, Lewisham Street, Bruntcliffe, Morley, £15,813 respectively (recommended, subject to Ministry approval).

**Newcastle upon Tyne.**—Conversion of the following into flats and maisonettes, for City Council: 168 Rye Hill—J. G. Spotswood, Ltd., 2 Heaton Road, Newcastle upon Tyne, 6, £1,772; 220 Westmoor Road—T. W. Hadden and Son, Ltd., 180 New Bridge Street, Newcastle upon Tyne, 1, £1,806; 63 Warrington Road—W. W. Kelsey (Builders), Ltd., Back Hanover Square, Newcastle upon Tyne, £2,197 (recommended).

26 Kenilworth Road—Thomas Durkin and Sons, Ltd., 25 Harriot Drive, Newcastle upon Tyne, £1,738 (recommended, negotiated tender).

**Newmarket, Suffolk.**—Four flats with garages for medical staff at the General Hospital, for the East Anglian Regional Hospital Board—W. P. King and Son, Oxford Road, Exning, Newmarket, £14,844 (recommended).

**Oxford.**—Fifty-four Easiform houses at Littlemore, for St. John's Stone Hospital, Oxford Regional Hospital Board—John Laing and Son, Ltd., Mill Hill, London, N.W.7.

**Petersfield, Hants.**—Seven houses, site 2, Borough Road, for U.D.C. J. Thomas, engineer and surveyor—Powell and Lillywhite, Ltd., Rowlands Castle Road, Horndean, Portsmouth, Hants., £18,204.

**Petersfield, Hants.**—Eight four b.r. houses, four three b.r. houses, and eight two b.r. flats at Tower Road estate, Liphook, for R.D.C. N. P. Scott, engineer and surveyor—Powell and Lillywhite, Ltd., Rowlands Castle Road, Horndean, Portsmouth, £43,652. Work commencing Dec.

**Plymouth.**—Roof tiling for 24 flats and one warden's flat at Southway, for City Council—The Marley Tile Co., Ltd., 13 Hatch Pond Road, Waterloo, Poole, Dorset, £592 (recommended).

**St. Albans, Herts.**—Twenty old people's flats, for R.D.C.—Gregory Housing, Ltd., 21 Farncombe Road, Worthing, Sussex.

**Shaftesbury, Dorset.**—Six Homeville traditional bungalows at Bourton, Silton and Buckhorn Weston sites and four Homeville traditional bungalows at Motcombe and Iwerne Minster, for R.D.C.—R. G. Ashford and Son, Sturminster Newton, Dorset and G. Clapcott and Son, Bournemouth, respectively.

**Shoreditch.**—Following for B.C.: 36 one-bedroom and 55 two-bedroom flats and 36 garages, etc., comprising blocks 6, 7 and 8 at Charles Square estate—Tersons, Ltd.,

ROAD ROLLERS VIBRATORY ROLLERS CONCRETE MIXERS SMALL TRENCHERS BULLDOZERS



POWER GRADERS DINKUM DIGGERS CRAWLER SHOVELS COMPRESSORS PUMPS DUMPERS

4 Dollis Park, London, N.3, £403,000; 128 dwellings comprising blocks 5, 6, 7, 8 and 9 at St. John's Estate—Herbert Richardson and Son, Ltd., Slade Green Road, Erit, £323,666; 12 flats comprising block 8 and three garages and seven perambulator sheds at Windsor Terrace—Carlton Contractors, Ltd., Epsom, Surrey, £33,993 (recommended, subject to Ministry approval).

**South Shields, Dur.**—One-hundred and twenty-nine houses at Simonside, for the B.C. John Reid, borough engineer—Whittall (Builders), Ltd., West Boldon, Co. Durham, £194,271.

**Street, Som.**—Ten houses at Queens Road extension site, for U.D.C.—B. Stevens, Ltd., £14,597 (subject to Ministry approval).

**Sunderland, Dur.**—Three-hundred and fifty-one houses at Town End Farm, for the B.C. H. C. Bishop, borough architect—Direct Labour.

**Walthamstow, Essex.**—Provision of casement windows for Tenby Road, Southcote Road and Newman Road housing schemes, for B.C.—John Sadd and Sons, Ltd., 329 High Holborn, London, W.C.1, £9,945 (recommended).

**Whitby, Yorks.**—Eighteen houses at Helredgate for the U.D.C.—W. Garbutt and Sons, Sleights, Whitby, £37,692.

**Woolwich.**—Following for B.C.: Thirty-five dwellings, etc., at the junction of Frances Street and Woolwich Church Street, St. Mary's C.D.A.—Direct Labour, £78,356 (recommended, subject to Ministry approval); Kirk and Kirk, Ltd., £90,716; Wates, Ltd., £91,813; Halsey and Sons, Ltd., £96,200; L. H. Mildwater and Sons, £96,595; John Crisp, Ltd., £97,120.

Provision of roof tiling, etc., at 152 dwellings at Commonwealth Way—Marley Tile Co., Ltd., Dickley Lane, Lenham, Maidstone, £3,330 (recommended).

Two-hundred and fifty-two dwellings, eight shops and 49 garages, etc., at Glyndon redevelopment area, stage one—Direct Labour, £742,194.

#### MATERIALS AND SUPPLIES

**Barking, Essex.**—Supply of ironmongery for B.C.—James Gibbons and Co., Ltd., 3 Melton Street, London, N.W.1, £1,637.

**Dagenham, Essex.**—Supply of carcassing timber for Oxlows Lane estate, for B.C.—Merediths, Ltd., Carpenters Road, London, E.15, £1,421 (recommended).

**Southend-on-Sea, Essex.**—Supply of 290 dual and 51 single parking meters, for B.C.—Karpark Meters, Ltd., Bicester Road, Aylesbury, Bucks, £8,207 (recommended).

**Durham.**—Supply of following for C.C.: Tubular towers for use in the painting section—Easy Stages, Ltd., Hemel Hempstead, £947 (accepted); Martin Thomas, Ltd., £3,146; Mills Scaffolding Co., Ltd., £1,403; Scaffolding (Great Britain), Ltd., £1,235; Kwikform, Ltd., £1,158.

Twenty-four prestressed concrete beams, each 37 ft. long (for Grant Bridge, Gainsford)—Dow-Mac (Products), Ltd., Eaglescliffe, £1,099 (subject to Company's conditions).

Supply of surface dressing for hard porous hockey pitch at Neville's Cross Training College—Maxwell M. Hart (Glasgow), Ltd., Manchester, £1,207.

**Plymouth.**—Supply of the following for City Council: Fortic cylinders and Prestex fittings—Cornish Mines Supply Co., Ltd., West Hill, St. Austell, £2,619 and £1,500; cast-iron R.W. pipe—Metal Agencies Co., Ltd., Avon Works, Winterstoke Road, Bristol, 3, £1,589; selected joinery soft wood, red deal (36 standards)—Cole Bros. and Fox Elliott, Ltd., Millbay Docks, Plymouth, £4,513 (recommended).

#### MISCELLANEOUS

**Consett, Dur.**—Assembly hall seating at new Technical College for C.C.—New Equipment, Ltd., Croxdale, £1,871 (recommended).

#### PLANT AND MECHANICAL TRANSPORT

**Birmingham.**—Supply of the following for Birmingham Tame and Rea District Drainage Board: (1) Crawler-mounted excavator,  $\frac{1}{2}$  cu. yd. diesel engine driven; (2) Tractor-mounted trenching equipment,  $\frac{1}{2}$  cu. yd. diesel engine driven; (3) Pneumatically tyred dumpers (two),  $\frac{1}{2}$  cu. yd. diesel engine driven—(1) Thomas W. Ward, Ltd. (Smiths), Bayton Road, Exhall, Coventry, £7,602; (2) Burgess Industrial Plant, Ltd., Wolverhampton Road, Stafford, £1,864; (3) Stephenson's (Plant Hire), 181/183 Price Street, Birkenhead, £656.

**Bromley, Kent.**—Supply of three Paxit III refuse collection vehicles, for B.C.—Dennis Bros., Ltd., Guildford, Surrey, £3,800 each (recommended).

**Chichester, Sussex.**—Supply of one J.C.B. 4 hydraulic excavator with two buckets, for City Council—Marsh Plant and Machinery Co., 23 South Street, Emsworth, Hants, £2,856 (recommended).

**Durham.**—Supply of following for C.C.: One Commer 30-cwt. diesel-engined van and two 1,000-gallon capacity mechanical gully emptiers—Minories Garage, Ltd., Darlington, £844 and £5,047 respectively; six Roughrider light dumper wagons—Liner Concrete Machinery Co., Ltd., Gateshead, £2,052; one self-propelled power operated cold emulsion sprayer—The Phoenix Engineering Co., Ltd., Chard, Somerset, £517; two 5-ton diesel-engined independent gritter bodies—Atkinson's Agricultural Appliances, Ltd., Enterprise Works, Clitheroe, £1,530; one suction road sweeper (less fleet users' discount on chassis)—Johnston Bros., Engineering, Ltd., Vincent Lane, Dorking, Surrey, £3,481; eight 5-ton diesel-engined wagons—Holland Motors, Ltd., 4 Virginia Street, Southport, £8,125 less £20 discount; two Karrier Bantam chassis scutles for the Consett and Shildon travelling libraries replacement—Minories Garage, Ltd., Darlington, £1,569.

**Hertford.**—Supply of a three-ton, six cylinder Bedford J.2.S. vehicle with diesel engine, for B.C.—Hertford Motor Co., Ltd., 140 Fore Street, Hertford, £1,054 (recommended).

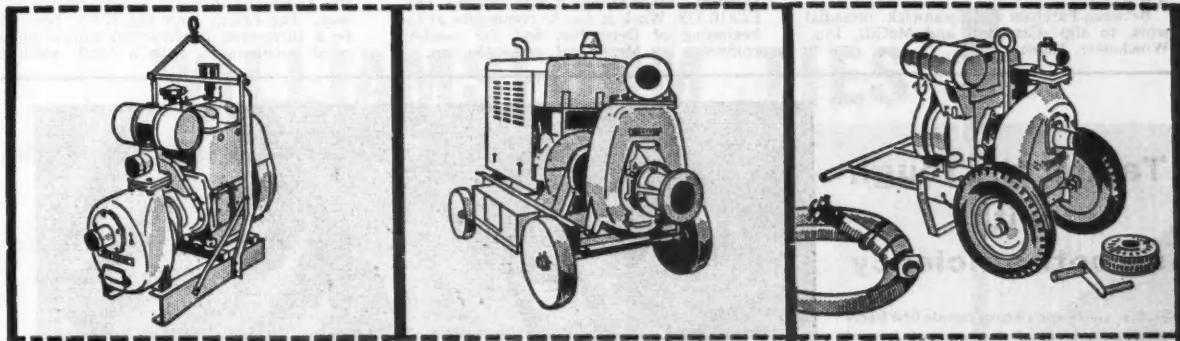
**Heywood, Lancs.**—Supply of one 2-ton and one 3/4-ton tipping wagons, for B.C.—Heywood Motors, Ltd., 7 Bridge Street, Heywood (recommended).

**Hornsey, Middx.**—Supply of a suction road sweeper on an Austin five-ton chassis, short wheel base, for B.C.—Johnston Bros., Ltd., £3,450 (recommended).

**Leeds.**—Supply of an 18 cu. yd. dual tip bin lifter refuse collection vehicle on a Karrier chassis for City Council—Cox and Co. (Leeds), Ltd., Regent Buildings, Regent Street, Leeds, 2, £2,869 (recommended).

**Liverpool.**—Supply of a 3-ton Morris petrol-driven tipping wagon for City Council—W. Watson and Co., Ltd., Bold Street, Liverpool, 1, £945 (recommended).

**Manchester.**—Supply of following for City Council: One 4-ton medium wheelbase tipping wagon fitted with certain optional extras—Rootes, Ltd., Manchester; plant—Millars' Machinery Co., Ltd., London, Liner



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**Concrete Machinery Co., Ltd.**, Gateshead, and C. H. Johnson (Machinery), Ltd., Stockport (recommended).

**Newcastle upon Tyne.** — Supply of two mechanical loading shovels and equipment for City Council—R. H. Patterson and Co., Ltd., Forth Street, Newcastle upon Tyne, 1, £3,134 (recommended).

**Sheffield.** — Supply of following for City Council: three 3-ton Bedford tippers—Bentley Bros. (Sheffield), Ltd., 69 Wicker, Sheffield, 3, £3,180; one International B.T.D.-6 Crawler tractor fitted with operators cab, Drott model B6-K3 skid shovel equipment and Shawnee Warrior Mark 3 digger—R. Cripps and Co., Ltd., Nottingham, £4,511 (recommended).

**Worthing, Sussex.** — Supply of one 3-ton lorry and compressor plant, for B.C.—Caffyns, Ltd., 1 Saffrons Road, Eastbourne, £749 and George Cohen, Ltd., Broadway Chambers, London, W.6, £1,675 respectively.

#### PLAYING FIELDS, PARKS, ETC.

**Bolton, Lancs.** — First phase of the construction of playing fields at New House Farm, for B.C.—En-Tout-Cas Co., Ltd., Syston, Leicester (recommended, subject to Ministry approval).

**Plymouth.** — Provision of a garden and car park on south side of Princess Street, laying-out of garden adjoining footbridge at Princess Square and completion of garden at north end of Armada Way, for City Council—Direct Labour (recommended). Estimated cost £3,004, £5,005 and £5,201 respectively.

**Stockport, Cheshire.** — Soil stripping at Walnut Tree estate, Cheadle Heath, for B.C.—Butterworth and Partners, Langley Mill, Nottingham.

#### RAILWAY ENGINEERING

**British Railways.** — Following contracts placed: Southern Region:

Shoreham/Bramber: new culvert—J. T. Mackley and Co., Ltd., Shoreham-by-Sea, Sussex.

Bentley: station renovations—Alfred Bagnall and Sons, Ltd., Teddington, Middx.

Kingston: station renovations—Alfred Bagnall and Sons, Ltd., Teddington, Middx.

Preston Park Station: earthworks and extension to platforms—Aubrey Watson, Ltd., Henley-on-Thames, Oxon.

Dormans and Lingfield: station renovations—P. and M. Contractors, Ltd., London, S.W.4.

Between Fareham and Swanwick: remedial work to slip—Campbell and McGill, Ltd., Winchester, Hants.

Guildford: repairs to goods shed—Maurice Hill, Ltd., Horndean, Hants. Bournemouth West: station renovations—James Drewitt and Son, Ltd., Bournemouth, Hants.

Portsmouth Harbour: repairs to concrete sub-structure—The Gunite Construction Co., Ltd., Hitchin, Herts.

Waterloo Station: repairs to asphalt surfaces—Durable Asphalt Co., Ltd., London, N.I.

London (Eastern) District: cleaning and painting of bridges—C. and T. Painters, Ltd., London, N.W.10.

Feltham: repairs to locomotive sheds—The Gunite Construction Co., Ltd., Hitchin, Herts.

London Bridge: reconstruction of bridge at 2 miles 9 chains—Coffin and Co., Ltd., Rickmansworth, Herts.

Nine Elms Motive Power Depot: recladding of roofs—Maurice Hill, Ltd., Horndean, Hants.

Crediton: reconstruction of part of bridge 558A—Aubrey Watson, Ltd., Henley-on-Thames, Oxon.

Waterloo Station: repairs to platforms—Aubrey Watson, Ltd., Henley-on-Thames, Oxon.

Nine Elms: asphaltiting to canopy—Durable Asphalt Co., Ltd., London, N.I.

Hastings Station: asphaltiting to roofs—Ragusa Asphalt Paving Co., Ltd., Shoreham-by-Sea, Sussex.

#### RIVER AND FLOOD PREVENTION WORKS

**London.** — Repairs to the River Roding embankment in Wanstead Park, for City Corporation—C. J. Sims, Ltd., 2 Victoria Street, London, S.W.1, £993 (recommended); J. T. Luton and Son, Ltd., £1,163; W. and C. French, Ltd., £1,058.

#### ROADS, BRIDGES AND SITE WORKS

**Armagh.** — Construction of a further section of the T.3 Motorway between Verner's Inn and Birches, for C.C.—Thomas Lowe and Sons, Ltd., Carryduff House, Carryduff, Belfast, in association with Farrans, Ltd., Dumurry, Belfast, £1,938,860 (accepted); City Contractors and Plant Hire Co., £1,973,583; Farrans, Ltd., £2,176,253; Sir Alfred McAlpine and Son (N.I.), Ltd., £2,442,167; White and Co., £2,523,459; John Graham (Dromore), Ltd., £2,573,406; Leonard Fairclough, Ltd., £2,598,072; Dowsett Engineering Construction, Ltd., £2,810,539. Work is due to commence at the beginning of December, and the resident engineer is Mr. J. J. MacAleenan, 3

Charlemont Place, Armagh. The consulting engineers are Robert F. Earley and Partners, London.

**Birmingham.** — Resurfacing of paths and drives at Summerfield Hospital, for the Regional Hospital Board—The General Asphalt Co. (Midland and La Brea), Ltd., 56 Mill Street, Birmingham, 5, £4,406 (recommended).

**Bolton, Lancs.** — Following for B.C.: Surfacing of the carriageway in Jethro Street—Trinidad Lake Asphalt Co. (North Western), Ltd., India Buildings, Water Street, Liverpool 2 (recommended, extension of contract).

Private street works at Albert Road West from Lingmoor Road to Markland Hill Lane—William Pollett and Co., Ltd., Pool Street, Bolton (recommended, subject to Ministry approval).

**Bromley, Kent.** — Supply and erection of an Usk type footbridge alongside Ivy Bridge, for B.C.—Tubewrights, Ltd., Egginton House, 25 Buckingham Gate, London, S.W.1, £2,635 (recommended).

**Cheadle and Gatley, Cheshire.** — Making-up of following for U.D.C.: Oak Drive, Cheadle Hulme and Ramillies Avenue (part), Cheadle Hulme, Duncan S. Graham, engineer and surveyor—Lowe, Millward and Scully, Ltd., 6 Rostherne Road, Wilmslow, Cheshire.

**Chesterfield, Derbyshire.** — Following for R.D.C.: Construction of footpaths, verges and lay-by at Reynard Crescent, Renishaw; and construction of footpaths and verges on parts of Arnold Avenue, Stoneley Crescent and Stoneley Close, Charnock Hall estate, Gleadless. Direct Labour, £1,258 and £1,600 respectively (recommended).

**Coalville, Leicestershire.** — Roads and sewers, Wentworth Road estate for Wm. Davis and Co. (Leicester), Ltd.—Reliable Roads (Shepshed), Ltd., Shepshed, Loughborough.

**Cockermouth, Cumbria.** — Construction of a footbridge across the River Cocker linking Waterloo Street and Brewery Lane, for U.D.C.—Cumbria Contractors, Ltd., Scotch Street, Whitehaven, £2,970.

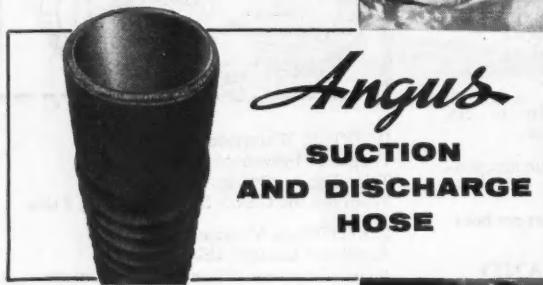
**Dagenham, Essex.** — Repairs to joints in concrete roads for B.C.—W. and J. Glossop, Ltd., 123 East Hill, London, S.W.18, £670 (recommended).

**Durham.** — Advance construction of bridges on the route of the Darlington By-pass, part of the Durham Motorway, for C.C. Two bridges are included in the contract, one to span the River Tees and the other the Darlington-Barnard Castle branch railway. The bridge over the River Tees will be a three-span construction, supported on piled foundations, with a total width of

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about 250ft, between abutments. The railway bridge will have a single span of about 30ft.—The Cementation Co., Ltd., Bentley Works, Doncaster, £226,796. Work to commence within a few weeks.

**Gravesend, Kent.**—Construction of about 5,250 sq. yd. carriageway in concrete, together with short sections of sewer, at Cruden Road, for B.C.—Mowlem (Civil Engineering), Ltd., 91 Ebury Bridge Road, London, S.W.1, £16,280 (subject to Ministry approval).

**Gravesend, Kent.**—Milton Road reconstruction (part), for B.C.—Waywarden, Ltd., 215 Forest Road, London, E.17, £3,153.

**Heston and Isleworth, Middx.**—Second stage of the construction of roads and sewers on the Cranford Lane (north) housing estate, for B.C.—Roadways and Car Parks, Ltd., 174 Twickenham Road, Isleworth, £10,831 (recommended, subject to Ministry approval).

**Ilford, Essex.**—Following for B.C.: Resurfacing various school playgrounds—Home Counties Contracting Co., Ltd., 24 Hertford Road, London, N.9, £2,842; maintenance of mastic asphalt footway verges 1961/62—George Wimpey and Co., Ltd., 26 Hammersmith Grove, London, W.6, £7,762 (recommended).

**Leamington Spa, War.**—Repairs to roads and pathways at Weston Hospital, for the Birmingham Regional Hospital Board—John Hadfield and Sons, Ltd., 2 Hartopp Road, Birmingham, 8, £2,072 (recommended).

**Leeds.**—Following works for City Council: Private street works, Albion Avenue (part)—General (Contractors) Leeds, Ltd., 5 Rufford Avenue, Yeadon, £1,182; Victoria Park Grove (part) and the Grange Road (part)—Dalton and Higgins, Canal Wharf, Leeds, 11, £1,033 (recommended).

**Leicestershire.**—Following for C.C. R. W. Grigson, County Surveyor—Making up of Clarence Road and Limetree Road, Enderby; reconstruction of kerbs and paths, western area and improvement of trunk road, A.453 at Measham—Clayton Bros., Ltd., Hathern, Loughborough.

**Liverpool.**—Following for City Council: Site investigations for proposed redevelopment of Georges Pier Head—Truscon, Ltd., Liverpool (recommended). Estimated cost £1,350.

Extending the special paving in St. Chad's Parade, Kirkby, over an area of approximately 1,800 sq. yd.—Holland & Hannen and Cubitts (North West), Ltd., New Chester Road, Bromborough, Cheshire, £2,472 (recommended, subject to Ministry approval).

**Luton, Beds.**—Construction of clearways to complete phase one of the airport development programme, for B.C.—Sir Robert McAlpine and Sons, Ltd., 80 Park Lane, London, W.1, £12,830 (recommended, negotiated tender).

**Manchester.**—Following for City Council: Private street works in Crescent Range, Victoria Park—W. Snape and Sons, Ltd., Eccles.

Supply and erection of footbridge over Altringham Road at Wythenshawe Baths—Cleveland Steel Products (Kempton), Ltd., Leicester Road, St. Johns, Narborough; site works, painting of steel work and footpath, fencing and guard rails—Direct Labour.

Surfacing of land laid to street at proposed automatic telephone exchange, Wilmslow Road, Withington, and widening of Styall Road, Wythenshawe (a) north of Hollyhedge Road, and (b) immediately south of the junction with Civic Centre Road and Finney Lane—Direct Labour.

Construction of the new terminal apron at the Airport—R. Costain (Civil Engineering), Ltd., London (extension of contract). (All recommended).

**Mitcham, Surrey.**—Construction of roads and sewers to serve houses and bungalows in course of erection at Merrow Woods, for B.C.—Pawlyn (Contractors), Ltd., Oakover, Byfleet Road, Cobham, £1,515 (recommended).

**Northumberland.**—Road improvement scheme between Seahouses and Beadnell, for C.C. G. F. Garnett, County Surveyor—Direct Labour. Estimated cost £70,000.

**Nottingham.**—Following for City Council: reconstruction and widening of Pleasant Row and provision of sewers—Direct Labour, £6,541; roads and sewers adjacent to Sandhurst Road, Bulwell—Butterworth and Partners, Ltd., 62 Station Road, Langley Mill, Nottingham, £31,810 (recommended).

**Oxford.**—Reinstatement of footpath in Queen Street and St. Ebbe's, for City Council—Direct Labour (recommended). Estimated cost £1,620.

**Plymouth.**—Resurfacing of Wolseley Road, improvement of Prospect Row and Monumen Street, Devonport; widening of Fore Street, road works in Peel Street/St. Mary Street area and levelling, extending and surfacing forecourt at Breton Side bus station, for City Council—Direct Labour (recommended). Estimated cost £9,854, £5,023, £2,387, £4,983 and £6,670 respectively.

**Poplar.**—Widening of Old Ford Road and Wick Lane, for B.C.—Fitzpatrick and Son (Contractors), Ltd., 455 Old Ford Road, London, E.3, £48,826 (recommended).

**Redcar, Yorks.**—Construction of approximately 1,860 sq. yd. of flexible carriageway and tarmacadam surfacing, and the provision and laying of 380 lin. yd. of precast concrete kerb and channel, together with gullies and 6in. dia. connections to Coatham Enclosure for B.C. K. W. Ash, borough engineer—Tees-side Concrete and Asphalt Construction Co., Ltd., 1a Darlington Street, Thornaby-on-Tees, £4,315. Work commencing Nov./Dec.

**Sheffield.**—Following for City Council: Construction of a service road off The Moor, Eldon Street and Rockingham Street—Direct Labour, estimated cost £3,035; 'Gunite' repairs to the Rydal Road, Leppings Lane, Charlotte Road and Stannington Road bridges—Whitley Moran and Co., Ltd., 5 Old Hall Street, Liverpool, 3. Estimated cost £1,994 (both recommended).

Asphalting additional section of the Promenade—Mells Asphalt, Ltd., 94 Rectory Grove, Leigh-on-Sea, £970 (recommended, extension of contract).

**Sutherlandshire.**—Invershin-Ledmore-Lichinver Road road works, route A.837—section Ledmore-Stonechribie Farm (approximately 4½ miles), contract 23, for C.C. W. Sutherland, county surveyor—W. and J. R. Watson, Ltd., Romano House, Station Road, Corstorphine, Edinburgh. Work commencing January 4.

**Tunbridge Wells, Kent.**—Provision of footpaths and open spaces, etc., at Sherwood estate, for B.C.—Direct Labour (recom-

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mended, subject to Ministry approval), estimated cost £11,552.

**Walthamstow, Essex.**—Improvement of Shernhall Street between Eastern Road and Oliver Road, for B.C.—Gabriel (Contractors), Ltd., Palmers Lane, Enfield, Middx., £5,290 (recommended).

**West Sussex.**—Construction of 2,480 lin. yd. of 26ft. wide reinforced concrete carriage-way alongside the Chichester By-pass to form a dual carriageway between Fishbourne and Chichester Canal, for C.C.—Martin Cowley, Ltd., 112 Jermyn Street, London, S.W.1, £93,118.

**Wolverton, Bucks.**—Advance preparation (road foundations, sewers, etc.) at Calverton House estate for U.D.C.—D. Tanner (Civil Engineers and Contractors), Ltd., 75 Stratford Road, Wolverton, £6,639 (accepted); Cooke's (Luton), Ltd., £6,732; Mannion Bros. (Harrow), Ltd., £6,804; Hadspahatic Const. Co., Ltd., £6,806; Kimbell Construction, Ltd., £7,250; G.F.X. Hartigan, Ltd., £7,482; Kettler and Heron, Ltd., £7,701; Bridgewater Bros., £8,531; C. H. Smith and Sons, Ltd., £8,548. Work commenced.

**Woolwich.**—Reconstruction and surfacing of Sewell Road from Panfield Road to Church Manorway and widening, surfacing and reconstruction of Harrow Manorway from Sewell Road to Abbey Wood Railway Station, for B.C.—Percy Bilton, Ltd., 54 Uxbridge Road, London, W.3, £66,358 (recommended); Ruddock and Meighan, Ltd., £68,835; Fitzpatrick and Son (Contractors), Ltd., £81,984; W. F. Rees, Ltd., £83,136; John Mowlem and Co., Ltd., £68,183; W. C. French, Ltd., £83,472.

#### SEWERAGE, SEWAGE AND REFUSE DISPOSAL

**Bexley, Kent.**—Replacement of the motors and starters at the East Wickham pumping station, for B.C.—Clough Smith Electrical, Ltd., 3 Buckingham Place, London, S.W.1, £1,350 (recommended).

**Birmingham.**—Supply to the site of the Board's proposed Yardley to Tyburn main sewer on Castle Bromwich Airfield, Chester Road, Birmingham, of cast-iron pipes and specials, for the Birmingham Tame and Rea District Drainage Board—Stanton and Staveley Sales, Ltd., P.O. Box 72, near Nottingham, £175,954.

**Birmingham.**—(1) Precast concrete troughs for the distribution of sewage. Approximately 3,660ft. run of trough 3ft. wide, 2ft. 6in. deep; (2) Precast concrete beams and

columns for supporting travelling sewage distributors. Approximately 7,300ft. run of beams and columns approximately 6ft. high at Minworth new works, bacteria beds block B for Birmingham Tame and Rea District Drainage Board—F. C. Construction, Co., Ltd., City Road, Derby, £19,440. Work commencing Jan.

**Calne and Chippenham, Wilts.**—Laying approximately 7,600yd. of 6in. sewers, with incidental works, at Derry Hill, near Chippenham, for R.D.C. R. A. Witham, engineer—The Cradwin Co., Ltd., Roseberry Road, Lower Bristol Road, Bristol, £42,531 (accepted); Hadspahatic Construction Co., Ltd., £43,340; Clark Bros., £47,183; Mahon and McPhillips, Ltd., £51,703; Ernest Ireland (Contractors), Ltd., £52,523; Smith and Lacy, Ltd., £55,153; Leonard Fisher, Ltd., £68,388; T. H. Contractors, Ltd., £71,346; Blackford and Sons (Calne), Ltd., £92,780. Work commencing Jan.

**Chelmsford, Essex.**—Danbury and other parishes sewerage scheme. Contract 2, for R.D.C., comprising about 16 miles of 6in. dia., 1 mile of 7in. dia., 2½ miles of 9in. dia., 1½ miles of 12in. dia., and 3 miles of 15in. dia. glazed stoneware, concrete and spun/cast-iron sewers; 3 miles of 4in., 5in., and 10in. dia. bitumen sheathed spun-iron rising mains, and four pumping stations in reinforced concrete, together with all other ancillary works. Lemon and Blizard, consulting engineers, 59 Tufton Street, Westminster, S.W.1. Tenders were invited on two bases, (a) fixed price and (b) with variation clause—Biggs Wall and Co., Ltd., Hampden Works, Cromwell Road, Muswell Hill, London, N.10. (a) £388,255 (accepted), (b) £388,255; Humphreys, Ltd., £421,269 and £413,471; Coward (Contractors), Ltd., £468,108 and £456,858; R. W. Hill and Co., Ltd., £487,969 and £484,769; Martin Cowley, Ltd., £523,477 and £477,958; Percy Bilton Ltd., £541,620 and £530,688; Thomas C. Stewart (Contractors), Ltd., £551,857 and £543,702; Cubitt and Gotts, Ltd., £573,800 and £562,800; Kettler and Heron, Ltd., £645,312 and £625,312.

**Glossop, Derbyshire.**—Supply and laying of about 100 lin. yd. of sewer in glazed stoneware and cast-iron pipe, the construction of three manholes, the installation of one hatch box, and all ancillary works at Lower Dinting for B.C.—W. R. Bates and Co., Ltd., 6 Corbar Road, Stockport, £555.

**Ilford, Essex.**—Construction of Woodford Avenue surface water scheme, for B.C.—

R. W. Hill and Co., Ltd., Beaches Drive, Chelmsford, £112,996 (recommended, subject to Ministry approval).

**Llandeilo, Carns.**—Construction of the Llandeilo sewerage scheme, for R.D.C.—Thyssen Shaft Sinking Co., Ltd., Cyneheide, Llanelli, £86,872.

**Luton, Beds.**—Supply and erection of pumps and control gear for the effluent pumping station, Chalton Sewage Purification Works, for B.C.—Gwynnes (Pumps), Ltd., Chancellors Road, London, W.6, £19,661 (recommended).

**Manchester.**—Culverting works at the controlled tipping site at Hawthorn Road, Chorlton-cum-Hardy—M. Dwyer and Co., Ltd., Manchester (recommended).

**Newtownards, Down.**—Laying of relief and diversion sewers, contract 10, for B.C. R. Ferguson and S. McIlveen, consulting engineers, 15 College Gardens, Belfast, 9—McAuley, McIlroy and Co., Ltd., 130 Lisburn Road, Belfast, 9.

**Nottingham.**—Construction of sewers for housing development at Rise Farm, for City Council—Direct Labour, £16,597 (recommended).

**Petersfield, Hants.**—Rebuilding filter walls, sewage disposal works, for U.D.C. J. Thomas, engineer and surveyor—Holdyne, Ltd., 50 High Street, Winchester, Hants, £5,520 (accepted); William Jones, Ltd., £5,950.

**Plymouth.**—Provision of new foul water sewer and resiting of the Laira pumping station, for City Council—Direct Labour (recommended). Estimated cost £3,950.

**Richmond, Yorks.**—Sewerage scheme for the Moulton area, for the R.D.C.—G. Dougill and Sons, Ltd., Chestnut Street, Darlington.

**Sheffield.**—Supply of filtration and chlorination equipment for the Hagg Lane relief sewer scheme for City Council—Paterson Engineering Co., Ltd., Windsor House, Kingsway, W.C.2, £680 (recommended).

**South East Derbyshire.**—Alvaston and Boulton sewerage and Stocker Flat sewerage schemes, for R.D.C. Sir Herbert Humphries and McDonald, consulting engineers—Park Chambers, 276 Monument Road, Edgbaston, Birmingham 16—Hadspahatic Construction Co., Ltd., Johnston House, Hatchlands Road, Redhill, Surrey. Estimated cost £198,000. Work to commence Nov. 20.

**Southend-on-Sea, Essex.**—Supply of machinery for the Eastern Esplanade pumping station,

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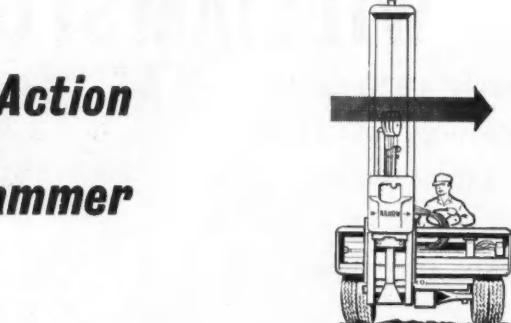
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for B.C.—Sulzer Bros., Ltd., 31 Bedford Square, London, W.C.1, £4,913 (recommended).

**Stourbridge, Worcs.**—Construction of the storm water sewer in Whitton Street and Glebe Lane for B.C.—Brennan and McCarron, 122 Garretts Green Lane, Sheldon, Birmingham, £3,080 (recommended).

**Swale, Kent.**—Improvement of Teynham s.d. works, for R.D.C., comprising the construction of a pumping station and an additional stormwater tank; the modification of an existing sedimentation tank inlet; alterations to the existing screening and overflow arrangements; the renewal of the distributors to the filter beds, and the construction of a dosing chamber; the laying of 800yd. of 4in. dia. asbestos-cement pipe rising main; together with fencing, drains, pipework, and other ancillary work. H. D. Hargraves, engineer and surveyor—W. E. Cox (Sheerness), Ltd., Unity Street, Sheerness, £12,864 (accepted); Arnold and Nathan, Ltd., £12,957; Hugh Brown (Engineers) Ltd., £13,326; Wingham Engineering Co., £13,633; Richard Costain (Construction) Ltd., £13,634; T. H. Contractors, Ltd., £16,786. Work to commence Dec. 1.

#### STREET LIGHTING

**Heston and Isleworth, Middx.**—Supply of following for B.C.: 214 full group A 400-watt lanterns—Atlas Lighting, Ltd., 233 Shaftesbury Avenue, London, W.C.2, £15 6s. 3d. per lantern (including control gear); 216 modified group A 250-watt lanterns—Revo Electric Co., Ltd., Tipton, Staffs, £8 17s. 6d. per lantern (including control gear); 430 steel group A lighting columns—Stewarts and Lloyds, Ltd., 41 Oswald Street, Glasgow, C.1, £23 14s. per column (recommended, subject to Ministry approval).

**Hornsey, Middx.**—Improved street lighting in Archway Road, Great North Road and Hornsey Lane for B.C.—Machinery Installations, Ltd., 60a High Street, London, W.3, £7,416 (recommended, subject to M.T. approval and the Islington Metropolitan B.C. in respect of Archway Road and Hornsey Lane respectively).

**Manchester.**—Supply of lanterns and steel columns for special lighting scheme for St. Ann's Square, St. Ann Street and Exchange Street, for City Council—Atlas Lighting Co., Manchester (recommended).

**Poplar.**—Erection and dismantling of class A lighting columns, for B.C.—Erecon, Ltd., Great Amwell, Ware, Herts. (recommended). **Woolwich.**—Relighting of Shooters Hill, for B.C.—Eleco, Ltd., Sphere Works, St. Albans, Herts, £1,040 (recommended); Harland and Wolff, Ltd., £1,098; Clough, Smith and Co., Ltd., £1,153.

**Worthing, Sussex.**—Supply of 1,200 time switches, for B.C.—Vennor, Ltd., Kingston By-pass, New Malden, Surrey, £3 6s. each (recommended).

#### GOVERNMENT CONTRACTS

**Air Ministry.**—Contracts to the value of £4,000 or over for the week ended Oct. 27. Building work: Honington, Suffolk—

Walter Lawrence and Son, Ltd., Swaffham, Norfolk; Mormond Hill, Aberdeenshire—Alexander Hall and Son (Builders), Ltd., Aberdeen; Brampton Park, Hunts.—Kerridge (Cambridge), Ltd., Cambridge.

Surfacing work (to existing paved areas): Aldergrove, Northern Ireland—The Limmer Trinidad Lake Asphalt Co., Ltd., Belfast.

Electrical work (electrical mains distribution): Aberdeen, Kinloss, Morayshire, Wick, Caithness, etc.—James Scott and Co., Ltd., Glasgow.

**Ministry of Works.**—Contracts placed for week ended October 21:

Bedfordshire: Dunstable—erection of post office and sorting office—Stanley Hugh Leach, Ltd., 231 Yeadings Lane, Hayes, Middx.

Cardiganshire: Royal Aircraft Establishment, Aberporth—installation of radars—Marconi's Wireless Telegraph Co., Ltd., Marconi House, Chelmsford, Essex.

Cumberland: Rocket Establishment, Spadeadam—installation of street lighting—Aberfren Cable and Construction Co., Ltd., Pike Mills, Green Street, Kidderminster, Worcester; frost precautions, hydrant pits—Wm. Press and Son, Ltd., Willoughby Lane, Tottenham, N.17.

East Lothian: Scottish Fire Training School, Gullane—electrical installation—Pratt Bros. (Edinburgh), Ltd., 3 West Park Place, Edinburgh, 11.

Lancashire: Darwen—erection of telephone exchange—John Turner and Sons (Preston), Ltd., William Henry Street, Preston.

London: Joint Office Building, 246 Stockwell Road, Brixton, S.W.9—internal decorations—J. W. Green (Painters), Ltd., 171 Graham Road, Wimbledon, S.W.19; Royal Hospital, Chelsea, S.W.3—alterations to secretary's block—Thomas and Edge, Ltd., 52 Macbeth Street, Woolwich, S.E.18; South Eastern Parcels Office, Union Street, S.E.1—new works and alterations—Howe and White, Ltd., 35 Manor Road, Wallington, Surrey.

Middlesex: Public Records Office, Hayes—hot water heating—C. J. Jeffries, Ltd., 149A Lancaster Road, Kensington, W.11.

Nottinghamshire: Rampton Hospital, Rampton—alterations and extensions to dispensary block—H. Rowse and Sons, Ltd., 19 High Street, Mansfield, Woodhouse.

Surrey: Veterinary Research Laboratory, New Haw, Weybridge—erection of small animals building—E. P. Wickens and Sons, Ltd., 93 Eastwood Road, Chertsey; Government Buildings, Ruskin Avenue, Kew—external and internal decorations—Fields (Richmond), Ltd., 12 Kew Road, Richmond.

Sussex: Admiralty Research Development Establishment, Langhurst—erection of drawing office—Y. J. Lovell (Sussex), Ltd., Bishopric, Horsham.

Worcestershire: Ministry of Aviation, Park View Hostel, Malvern—modifications—Thos. Broad, Ltd., Graham Works, Malvern.

Yorkshire: Office Building, Kirklevington Grange, Yarm—adaptations and extensions—G. Stephenson (Builders and Contractors), Ltd., Holdforth Works, Bishop Auckland; Harrogate—erection of telephone exchange—Cawood Wharton and Co., Ltd., Southlands, Harrogate.

Contracts placed for week ended October 28:

Cheshire: Cheadle Hulme—erection of Hulme Hall telephone exchange—L. Brown and Sons, Ltd., Wilmslow.

Glamorgan: Caerphilly Castle—erection of bridges—John Perkins and Sons, Ltd., St. Marks Road, Easton, Bristol, Somerset.

Gloucestershire: Station sorting office, Gloucester—reinforced concrete piling—Piling and Construction Co., Ltd., Kelvin Works, Hackbridge, Surrey; Ordnance Survey Office, Southampton—extension to huts—R. H. Hammond, Ltd., 236 Winchester Road, Southampton.

London: Government Offices, Thames House, S.W.1—internal decorations—South London Decorators, Ltd., Wandsworth Way, Willow Lane, Mitcham, Surrey; Government Offices, Great Westminster House, Horseferry Road, S.W.1—renewal of wood block flooring—Stevens and Adams, Ltd., Victoria Works, Osiers Road, Point Pleasant, Wandsworth, S.W.18.

Northamptonshire: Mill Lane, Wellington—erection of a new Borstal institution—Robert Marriott, Ltd., Midland Works, Rushden.

Perthshire—New lecture hall at the Civil Defence School, Taymouth Castle, Aberfeldy—supply, delivery and erection of A.75 superstructure—A. H. Anderson, Ltd., 58 Victoria Street, London, S.W.1.

Surrey: Royal Botanic Gardens, Kew—erection of a new filmy fern house—M. J. Gleeson (Contractors), Ltd., London, Road, North Cheam, Surrey.

**Post Office.**—Contracts for duct laying, etc., works to the value of £4,000 and over placed during the week ended Oct. 28:

W. A. Gale, Ltd., 48 Ruthven Road, Litherland, Liverpool 21; The Norwest Construction Co., Ltd., Litherland, Liverpool 21; D. and E. Smith (Neath), Ltd., 8a James Street, Neath, Glam.; Trants Excavations, Ltd., Le Beau Cote, Bon Aire Lane, St. Saviour, Jersey, Channel Isles.

**War Department.**—Contracts placed for the week ended October 27:

Dorset (Bovington and Lulworth): road-work—W. and J. Glossop, Ltd., Exeter.

Gloucestershire (Ashchurch): heating—Wippell and Row (Heating Engineers), Ltd., Exeter; (Bashley): building—Joseph Cartwright, Ltd., Mitcham.

Hampshire (Bramley): fencing—Penfield Fencing and Engineering, Ltd., Watford.

Kent (Rochester): heating—J. B. Jackson and Partners, Ltd., London, S.W.1.

London (Woolwich): building—Rush and Tompkins, Ltd., Sidcup.

Northumberland (Redesdale): jeep track—Thomas Muckle and Sons, Rothbury.

Nottinghamshire (Ranby Camp): building—Adam Eastwood and Sons, Ltd., Warsop. Oxfordshire (Bicester): building—Hinkins and Frewin, Ltd., Oxford.

Warwickshire (Bramcote): sports ground—J. W. Chorley, Ltd., Atherstone.

Wiltshire (Larkhill): building—W. E. Chivers and Sons, Ltd., Devizes.

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## Talking of Safety

by  
"DRAGEE"

A FEW years ago, a certain diplomatic personage was found to be suffering from a relatively mild but exceedingly unpleasant form of poisoning. One may imagine the anxious inquiries, the dark suspicions, and the eventual denouement. The culprit in this case was a bedroom ceiling loaded with heavy white paint which shed a slight yet deadly rain of dust particles over the sleeper. The paint, in fact, was flaking—and the flakes contained arsenic.

More recently, a number of school children were found to be suffering from an obscure stomach disorder. This was caused by the enamel of a certain brand of imported pencil.

Now, one doesn't try to stop children from chewing the ends of pencils. The habit is said to promote concentration, strengthen the teeth and—given the right kind of enamel—aid the digestion. No. The remedy—as with nearly all good safety measures—is to stop the trouble at the source, in this case by not using dangerous and unhealthy ingredients in paint if they are a possible cause of harm to anyone.

With industrial paints the method of defence is much the same: to avoid as far as possible the use of paints which contain noxious substances. When that is not practicable, we must adopt suitable safeguards.

The most dangerous of the common bases is lead, but, thanks to the dramatic effect of the Lead Paint Regulations of 1927, this particular menace has almost disappeared, notwithstanding the fact that a considerable amount of lead paint is still used in the construction industry.

As far as I know, I have only once seen the after-effects of lead poisoning, and this was a case I encountered during the war. The victim was a man of about 45, and he had spent most of his working life as a painter in the shipyards. When I first

*"Dragee," who is a practising safety engineer, would welcome subjects for discussion in this column. All names of persons mentioned in these discussions are entirely fictitious. Questions of law are expressed as the author's personal opinions and are not claimed to be authoritative.—EDITOR.*

encountered him he was labouring on a contract near Liverpool. He was still having treatment, and his appearance was a sorry sight. His face was ashen-grey, and his lips were almost colourless. When he spoke I noticed a strange bluish colour about the gums. His hands and eyelids trembled slightly.

Lead poisoning often occurs as the result of the prolonged inhalation of lead fumes or lead dust. Construction workers are subject to this danger when they are burning or scraping surfaces coated with lead paint. Lead is also introduced into the body through the mouth. Plumbers and other persons who handle lead and lead-based compounds are particularly vulnerable in this respect.

Treatment is difficult and the only effective answer to this unpleasant kind of malady is preventative action. The first step is to prohibit any person whose appearance suggests that he may have suffered from lead poisoning from working in any lead process until he has been medically examined and passed. The second is to insist upon a high standard of cleanliness whenever lead is being handled. The third is to protect persons employed against lead fumes or dust, at any place where these are liable to arise.

The Lead Paint Regulations of 1927 (S.R. and O. 1927 No. 847), which provides a practical and effective code of safety precautions for the protection of workers against this insidious hazard, was made under Section I of the Lead Paint (Protection against Poisoning) Act, 1926, and this fact may clear up a little mystery for those who have rummaged in vain through the main Factories Act of 1937 and lists of special regulations made under the Act. The Lead Paint Regulations are administered by H.M. Factory Inspectorate, and they are of special interest to builders because they apply to employers—and workmen—engaged "in or in connection with the painting of buildings." The very first requirement is that dry red lead may only be used to such extent as may be necessary for preparing stopping or filling material.

Certain dust-raising processes are forbidden, and the regulations then deal with arrangements for washing and for storing

clothes. In common with many other sets of regulations, there are certain duties which have to be observed by the employees themselves when using lead paint.

Whilst the foregoing regulations apply to the painting of buildings, Regulation 83 of the Building Regulations requires "adequate and suitable facilities for washing which shall include nail brushes, soap and towels" where persons are using "a lead compound or other poisonous substance" on a building job.

There is, of course, an official definition of a "lead compound." This appears in the earlier statutory order No. 1621 of 1926 and prescribes the method of ascertaining whether any paint or other material used in painting is "lead paint" within the meaning of the Act.

There are some who consider these requirements to be over-exacting and fussy, and I would simply remind them of my unhappy friend in Liverpool and of the many thousands who suffered so grievously before legislation and the co-operation of employers in many branches of industry succeeded in minimising this serious menace to health.

### RECORD NUMBER OF FIRES LAST YEAR

Over 62,000 fires occurred in buildings in the United Kingdom last year. This was the highest figure ever recorded since the Joint Fire Research Organisation began its statistical record in 1946.

These figures are given in "United Kingdom Fire Statistics 1960" now published. They point graphically to the increasing problem of fire prevention and control. Since 1946 the number of fires in buildings has increased steadily until today when it is nearly twice as high.

During 1960 local authority fire brigades attended 133,484 fires, and while this was considerably fewer than the record figure for 1959, when there was a very large number of outdoor fires in heathland, grassland and railway embankments, due to the exceptionally dry summer, it was otherwise the highest on record.

Comparative figures for the causes of fires show that the increase in electrical fires has continued.

The number of fires attributed to oil burning heaters has shown some decrease. It is not possible to say whether or not this was due to the mild winter or to users taking more care.

Space heaters were another major cause of fires, particularly in dwellings but those due to slow combustion stoves and gas heating apparatus showed little change.

On the extension of fires the report points out that nearly half of all fires are extinguished with the use of hose reel jets and that they appear quite adequate in a large number of incidents.

*\*"United Kingdom Fire Statistics, 1960." Published by H.M.S.O. for the Joint Fire Research Organisation, Boreham Wood, Herts. Price 12s. 6d., by post 13s. 3d. (U.S.A. \$2.25).*

### ROAD RECONSTRUCTION IN SKYE

The Secretary of State for Scotland is making a 100 per cent. grant to Inverness County Council on the cost, estimated at more than £250,000, of improving the Kyleakin-Broadford-Portree road (A.850) in the Isle of Skye between Sconser Lodge and the head of Loch Ainort.

The scheme now approved provides for a diversion to be built over the Druim nan Cleochd. The new road, which will largely follow the line of an old road, now only a rough track, and will be just over 4½ miles long, will be about 1½ miles shorter than the present A.850 round the coast via Moll. It will have an 18ft. wide carriageway in an overall road width of 30ft.; and although it will rise to between 400ft.-500ft. above sea level its steepest gradient will be 1 in 18.

The scheme has been prepared, and its execution will be supervised, by the County Council. The work will be done by contract; the Council expect to invite tenders shortly.



## CONSTRUCTION OF WESTERN AVENUE, LAGOS, NIGERIA

### Savings Made By Using Soil Stabilisation

THE engineers responsible for designing Western Avenue, Lagos, considered it was too costly to transport crushed stone and gravels from 60 miles away to form the flexible base of the road. A soils investigation, undertaken as part of the preparatory work for the project, revealed that it should be possible and economical to stabilise the local soils with small percentages of cement to form a pavement. This method was adopted and a saving of between £15,000 and £20,000 for the 2.7 miles of road was made.

The design and construction of this road formed the subject of a Paper presented last week at a meeting of the Institution of Civil Engineers in London by Mr. C. M. JOHNSTON, B.Sc., M.I.C.E., partner, Scott and Wilson, Kirkpatrick and Partners (Nigeria).

#### Pavement Design

The actual pavement design adopted was: 6in.-thick sub-base of sandy clay stabilised with 5 per cent. cement, covered by a 6in.-thick base of equal proportions of sandy clay and lagoon sand stabilised with 7½ per cent. cement. The sandy clay was typical of the sub-grade soils of the area and was won from a borrow area beside the road. Surfacing consisted of a 1.25in.-thick premix carpet using a heavy grade cut-back bitumen. Cycle tracks consisted of a 4in.-thick pavement utilising the sub-base mix with a surface dressing.

#### Construction

Giving details of the construction, Mr. Johnston said: Tenders were called for construction incorporating the soil-cement pavement design and at the same time prices were requested for crushed stone, rock, laterite, and gravel. In every tender the soil-cement prices were less than the alternative prices.

A contract was awarded in January, 1958, to Coast Construction (Nigeria), Ltd. The tender price was £204,000 against an estimated cost of £200,000. The in-situ soil-cement prices were 57s./cu. yd. for sub-base and 69s. 6d./cu. yd. for base-course mix. The contractors proposed a 12-month construction period but were required to alter this to a more realistic 18 months to allow for the rains. Their proposals for the soil-cement pavement included the use of three (subsequently increased to four) 10 cu. ft. Millars type EE paddle mixers with weigh-batchers, erected at the centrally sited borrow area, the batched material to be elevated to the mixers and then fed by chute into lorries for transportation to the site. After dumping, the material would be levelled by grader and rolled with a 10- to 12-ton steel-tired roller to the correct line and level.

Doubts were expressed as to the wisdom of levelling by grader, and the contractors readily agreed that levelling by hand might prove preferable. It was thought that the finished line and level might only be satisfactorily attained by finishing high and blading off surplus material if indeed a mechanical spreader might not be the answer.

General construction commenced in February, 1958, and proceeded without difficulty excepting on certain areas of sub-grade and fill during the rains when delays were incurred in drying out the material. The rains interfered in the laying and compaction of the final area of fill and sub-grade at the northern junction and delay was proving serious as was also the traffic problem. Recourse was had to the laying of a thin layer of soil-cement mix up to formation level and the length of road was opened to traffic. This expedient proved

entirely satisfactory and the pavement construction was able to proceed immediately the rains eased off.

In-situ density tests were carried out at frequent intervals on the sub-grade and an overall assessment of the densities showed a variation between 99 per cent. and 103 per cent. of the specified maximum dry density of the British Standard compaction test.

The surcharge material in the swamp area was left as long as possible but had to be removed before the primary settlement had everywhere occurred.

The bridge was built without difficulty. The deck shuttering was supported on girders temporarily cast into the columns due to the necessity for non-interference with a frequent train service.

#### Sub-base Course Trial Mixes

The soil-cement plant was erected by June, 1958, and the first trial stretches of sub-base course were laid in July, 1958. Steel forms were used to contain the sub-base. In the borrow area, material was excavated by crowd shovel and stock-piled under cover near the mixer. Some lumping of the mixed material was noted but lumps were removed as far as possible.

It was impossible in practice to spread the mixed material by grader and this operation was carried out by hand. The loose material was levelled with a timber screed. Rolling was carried out with a 10- to 12-ton steel-tired roller, and a tendency to slight ridging in front of the roller was noted. However, on the whole, the finished line, level, and texture were reasonable. The material was cured by damp sand. In-situ densities were measured by the sand-replacement method to check strengths.

Three faults soon appeared:

- (a) The densities were below the specified density and variable.
- (b) Transverse cracking of the material with cracks up to 0.1in. wide occurred at approximately 12ft. intervals.
- (c) Occasional laminations showed up in an examination of the surface.

Efforts were concentrated on improving the densities by different rolling techniques but little improvement was noted. Laminations appeared to occur in drying out during rolling and in making-up of low spots. This was rectified, although steel-tired rolling maintained the tendency to form laminations. Cracking was anticipated and not considered to be serious.

#### Base-course Trial Mixes

A length of base-course mix was laid and compacted by the steel-tired roller and again densities were below the specified requirement and variable, but cracking was reduced. The finished line and level was outside the required tolerances of 0.25in. in 10ft. and 0.25in. up or down at any point. Some concern was felt at the short-fall in density and a series of compaction tests were carried out on further material using the back axle of a loaded low-loader. The results were promising and the contractors constructed a pneumatic twin-tired roller capable of ballasting to 16 tons all-up weight, at a tyre pressure of 110lb./sq. in. and drawn by a Tournapull. Further trials were carried out with this roller.

At first it was thought that precompaction of the loose material was desirable before application of the new compactor, and initial rolling was carried out by lighter pneumatic-tired roller. However, this proved unnecessary and the heavy plant was able to operate direct on to the loose material. It rolled backwards and forwards from completed pavement gradually working across the full width. By the time this operation had been com-

pleted a fairly smooth-textured but irregular surface was produced. It was found satisfactory to complete the surface high and to blade off to line and level with a grader. No further rolling was necessary.

The results of the use of this plant were: increased density, absence of laminations, further reduction of cracking, and an improvement in the finished line and level. However, it soon became obvious that the specified density could not be attained except in isolated cases, and laboratory investigations were begun to help determine the reasons for the short-fall and to define the lower limit of acceptable densities. Super-compacting plant was not available.

Various combinations of rolling plant, including a light sheepfoot roller, were tried with the heavy pneumatic-tired compactor but this roller alone proved most effective. Construction proceeded accordingly with line and level obtained by grader blading.

#### Construction Problems

It is generally accepted that the best soil moisture content for pulverisation is at or just below the plastic limit of the soil, and this was found to be applicable to the soils at Western Avenue. The soils from the borrow area could have plastic limits ranging from 10 per cent. to 17 per cent., but it was found that the range normally encountered was 11 per cent. to 16 per cent. Thus, the natural moisture content of the soil used was usually about, or slightly higher than, its plastic limit.

This had a greater effect in the sub-base mix than in the base-course mix. In the latter the addition of sand to the soil had the effect of reducing the moisture content of the soil with a consequent improvement in pulverisation. In addition, the sand had an abrasive action during mixing which was important in improving soil pulverisation.

Only cement was added to the soil for the sub-base mix and this had little effect on the soil moisture content. Consequently, soil pulverisation in the sub-base was not always entirely satisfactory.

Lumping occurred in the mixer because of incomplete pulverisation of hard nodules and when the material was either too wet or too dry. Lumping was also caused by partially mixed soil-cement adhering to the paddles and being compressed against the sides of the mixer. Also, the material tended to lump because of snowballing of the mixed soil-cement as it rolled down the chute from the mixer to the lorry. However, the only source of weakness lay in the unpulverised and unmixed softer lumps of soil and these were recognisable and removed as far as possible during laying and spreading. Fortunately, they were restricted mainly to the sub-base because of the beneficial effect of the sand in pulverising the base-course mix.

The contractors encountered a problem where they stripped top-soil in order to expose an area of the material for fill purposes. Under hot and dry conditions the material quickly dried out. It had to be watered and scarified for use in the soil-cement mix and this, in turn, led to too wet conditions and further lumping. However, it was indeed fortunate that the natural moisture content of the soil generally was suitable for efficient and ready mixing, and it is recommended that in-situ moisture contents be carefully examined during investigations of soils elsewhere for use in soil-cement mixes.

In the process of spreading the loose materials for compaction, a sufficient area had to be laid before rolling to permit efficient use of the compacting plant and ensure overall continuity of operations. This, of course, led to considerable delay between mixing and compaction and some loss in moisture content in spite of protection by damp hessian.

Initially the loose material was spread to a thickness 50 per cent. greater than the required compacted thickness of 6in. This was increased to 70 per cent. for the base course to allow for blading off excess

material, this method giving improved line and level, and it was soon reduced to 60 per cent. with improved technique. This reduction had the added benefit of increasing the average density by 2lb./cu. ft. Decrease in the compacted thickness to below 6in. did not produce any noticeable increase in density; and material laid as an experiment in two 3in. layers showed lack of bond. The contractors were attracted to the use of the steel-tired roller in compaction of the base course, as it provided a smooth finish with less blading off. However, they found that it also produced a hard surface crust which was difficult if not impossible to trim with the grader and tended to produce laminations.

#### Testing and Control

In the borrow area, every day that soil-cement was mixed, moisture contents were determined on samples taken from the stockpiles of soil and sand to be used, and batching proportions were varied accordingly. Thereafter, moisture contents were determined on samples of mixed soil-cement at 9.30 a.m., 12 noon, and 3 p.m. as a check on the validity of the proportions. All batching of soil, sand, and cement was by weight, and water was added as necessary by hand from one-gallon or half-gallon measures.

Moisture content determinations on stockpiled soil taken from the borrow area ranged between 10 per cent. and 20 per cent., but they usually lay between 13.5 per cent. and 17 per cent.; the higher values being more common during the wet season and after showers of rain occurring during the dry season. Sand moisture contents ranged between 2 per cent. and 5 per cent. and fluctuated erratically being influenced by prevailing weather conditions, moisture content at the time of delivery, and length of time stockpiled.

With the sub-base mix, little moisture content control was usually necessary, since for most of the time the natural moisture content of the soil from the borrow area produced a mix moisture content around the optimum for field compaction. Variations in batching proportions were therefore made mainly to ensure that the cement content remained constant.

With the base-course mix, however, the moisture content as well as the cement content had to be controlled. The sand added to the mix invariably had a lower moisture content than the soil, thus causing the mix overall moisture content to be reduced to nearly or just below that required in field compaction. Water was therefore added to the batches as necessary and it was possible in this way to maintain the moisture content within  $\pm 1$  per cent. of the desired value.

The contractors naturally kept the size of each batch as large as possible. The sizes of batches normally used are given in the following table and represent the maximum capacity of each mixing unit.

Mix	Cement	Soil	Sand	Total	Approximate Weight of Wet Batch: LB.
Base	60	400	400	860	940 to 960
Sub-base	35	700	—	735	830 to 850

The figures given in the last column depended on the moisture contents of the soil-cement mix. It will be noted that the base-course mix batch was larger than that for the sub-base. This was because the base-course mix had a lower moisture content and the sand included had a lower plasticity than the soil mix. These two factors, viz. moisture content and plasticity have a marked effect on the amount of work which must be done in mixing and the higher they are the more mixing is required.

Mixing times varied in accordance with the moisture content and plasticity of the mix. A uniform base-course mix could be obtained with a mixing time from 1.5 to 2 minutes, but with the sub-base mix, just over 2 minutes was required and if the soil being used had a particularly high

moisture content, the time had to be increased to 3 minutes.

The contractors sometimes used an expedient in sub-base soil-cement mixing. If the soil used was much wetter than usual as happened after heavy rain, they would add a proportion of the relatively drier sand at their own expense to reduce the overall moisture content of the batches to a more suitable value.

On very warm days during the dry season an extra 0.5 gallons of water was added to each batch of base-course mix from 11 a.m. onwards. This was an arbitrary amount intended to allow for drying out of the stockpiles and evaporation of the mixed soil-cement during transporting, laying, and compaction. On these warm days, the air temperature increased by about 10 deg. F. from morning to noon and was usually about 96 deg. F. in the shade at noon. On cloudy days when the temperature variation was not so great no extra water was added.

The soil-cement mixes were transported from the mixing plant to the site by tipper truck and during the journey the material was covered with damp hessian to reduce loss of moisture. Immediately after dumping, the material was spread and levelled by hand and covered again with damp hessian until compacted.

Moisture content at compaction showed a variation from the mixing value and sometimes reduced to 8 per cent. for base-course and to 12 per cent. for sub-base course material. After compaction the base-course material was again covered with damp hessian until graded to finished line and level.

In-situ density tests were carried out at frequent intervals on both the compacted sub-base and base-course.

The mixed material was frequently sampled from the mixer for standard compaction and unconfined compressive strength tests.

All testing work was under the control of the Resident Engineer, and was carried out by a member of his staff who was a qualified soils engineer and by several Nigerian soils assistants.

A soils laboratory was provided on site and this was supplemented by the consultant's soils laboratory which was not far distant from the site.

#### Surfacing

An M.C.1 bituminous prime coat was applied to the soil-cement after curing and shrinkage, and later investigation showed that average penetration of 0.25in. had been achieved.

The double surface dressing originally specified for the pavement was included largely for economy and it had been recommended that a bituminous premix carpet should be laid within 12 months of completion. However, after construction it was decided that a 1.25in.-thick bituminous premix carpet with seal coat should be

laid as part of the contract. The additional cost was £16,000. This carpet consisted of a crushed granite aggregate of nominal maximum size 0.75in., with cement filler and a bitumen content of 5 per cent. by weight. It was laid by mechanical spreader.

As the western cycle track was not sited on its final line it was felt that some temporary and cheaper form of construction would suffice. A soil-cement pavement had been included for, but this was abandoned in favour of a sanded prime coat and bituminous surface dressing using 0.25in. chippings laid on the compacted soil. This has proved satisfactory and the paved area is sited and levelled.

The contract was completed in September, 1959, at an approximate cost of £220,000.

## LONDON CONSULTANTS IN PAKISTAN

W. S. ATKINS AND PARTNERS, consulting engineers, London, have recently established a Pakistan office in Karachi, to work in association with Covell, Matthews and Partners, the British firm of architects. This office is now fully in operation, with Mr. D. J. A. Alsop from W. S. Atkins and Partners, London head office, heading a staff of Pakistani designers and draughtsmen.

Already the Pakistan office has handled the civil and structural design for a milk factory, drug factory, petrol station, swimming pool and other similar projects. Work is to start shortly on another drug factory, a flour mill and various motor-car service stations.

The aim of this Pakistan venture is to offer all the W.S.A. and P. services available in the United Kingdom to Pakistan clients, design work being done either in Pakistan or in the U.K. as most appropriate.

A new office is now being opened in Dacca to cover East Pakistan, with the assistance of a small staff from Covell, Matthews and Partners under a reciprocal arrangement. Mr. N. J. Burne will act as manager for the whole of Pakistan with the opening of this new office.

## ENGLISH ELECTRIC WIN DOLLAR CONTRACT

The Grand River Dam Authority of Oklahoma, U.S.A., has awarded the English Electric Corporation of New York a contract worth £900,000 for the design, manufacture and delivery of four 35,000-h.p., 90 r.p.m., Kaplan water turbines with a runner diameter of 220in. for a new dam and power station on the Grand River at Markham Ferry.

The turbines will be manufactured by John Inglis Co., Ltd., of Toronto, an associate of the English Electric Co., Ltd. The design work will be done by the company's Hydro Electric Division at Netherthorpe and the model testing and development will be carried out in their hydraulic laboratories at Rugby. The consulting engineers for the project are W. R. Holway and Associates of Tulsa, Oklahoma, who have also been responsible for the construction of an earlier dam at Pensacola on the Grand River.

## CITY CENTRE'S U.S. DEVELOPMENTS

Between 6,000,000 and 10,000,000 sq. ft. of development is to be carried out in the United States during the next 10 years by the partnership of City Centre Properties and the U.S. Diesel Construction Corporation.

Announcing this in London recently, Mr. Jack Cotton, chairman of City Centre said that the developments would cost about \$400m.

The two companies are at present engaged in the erection of the Pan Am building over Grand Central Station in New York. Further projects are planned in Chicago, San Francisco, Denver (Colorado) and Memphis.

## TEN STOREY OFFICE BLOCK FOR LAGOS

A ten-storey office block valued at over £N350,000 is being built on the Marina, Lagos, by Taylor Woodrow (Nigeria), Ltd., for West African Properties.

The reinforced concrete building will feature metal sun breakers on the exterior and will be air conditioned throughout. Work is expected to be completed by March, 1963.

The architects are James Cubitt and Partners; the consulting engineers, Ove Arup and Partners; the quantity surveyors, W. J. F. Tillyard and the ventilating consultants, J. Roger Preston and Partners.

## CONCRETE BATCHING, MIXING AND POURING AT GLEN CANYON DAM, U.S.A.

FORMING part of the U.S. Bureau of Reclamation's huge Colorado River Water Storage Scheme, the Glen Canyon Dam project, now under construction and due for completion in March 1964, involves the biggest contract ever let by the Bureau and what is also claimed to be the biggest competitively-bid contract ever awarded to a single contractor. Valued at \$107,955,522 and awarded to Merritt-Chapman and Scott, the contract involves the batching, mixing and pouring of vast quantities of concrete both in the dam, powerhouse and other appurtenant structures.

Located in Arizona, 12 miles south of the Utah border, the Glen Canyon Dam is a concrete arch type structure and will be 710ft. high, 300ft. thick at its maximum section, 35ft. thick at the crest and 1,500ft. long. When the job is completed, some 5,200,000 cu. yd. of concrete will have been poured, including 4,770,000 cu. yd. in the dam proper.

The handling of such large quantities called for a 38-month concreting schedule with an average placing of 9,600 cu. yd. per day, and, to meet this output, it was decided to use specially designed 12 cu. yd. buckets. Previously, no bucket with a capacity greater than 3 cu. yd. had ever been used in a dam contract. The batching plant being used is also believed to be the largest ever employed for dam construction. Other outstanding equipment being used on the project includes the largest industrial refrigeration plant on record, large size concrete transfer car units capable of moving 24 cu. yd. at a time, and two giant traveling cableways each of 50 tons capacity, believed to be the biggest and fastest of their type.

Speed as well as size has been stressed at the Glen Canyon project. For instance, the aggregates are hauled to the batch plant stockpiles in 30 cu. yd. dump trucks that can be driver-loaded at the aggregate plant in 10 to 15 seconds and the cableways, concrete transfer cars and placement buckets were geared to speeds that would make it possible to load, transfer and place 48 cu. yd. of concrete every 5½ minutes from the two cableways.

### Aggregates

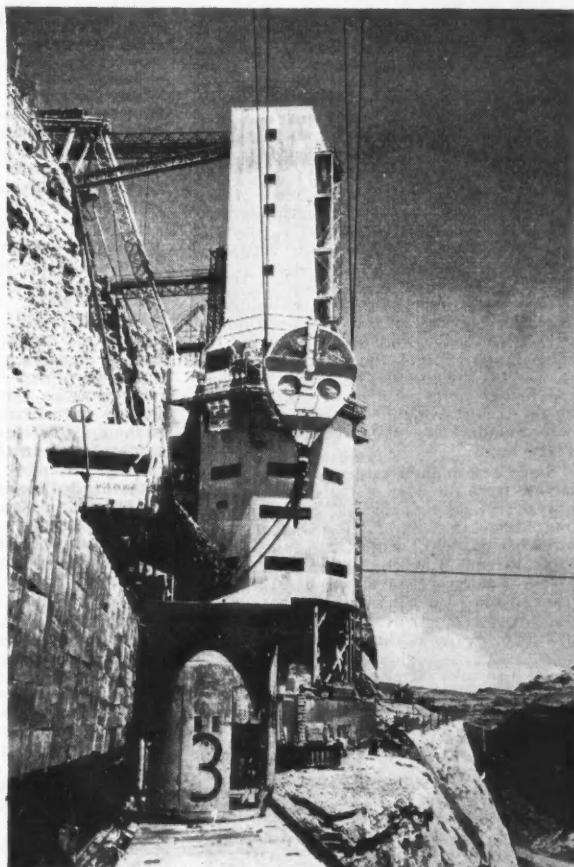
The aggregates for the Glen Canyon concrete are being recovered from the only acceptable deposits within economic hauling distance at Wahweap Creek, several miles north of the dam site. Since this material contains some lightweight calcareous siltstones, calcareous cherts, shaly limestones and ferruginous concretions, which is liable to produce "popouts" on the surface of the concrete when frozen and thawed, the 1,400 t.p.h. input aggregate installation at Wahweap

incorporates two heavy media separation plants for floating off this unwanted material. This freed aggregate is used particularly for the concrete which will be placed in the outer surfaces of the dam and other structures.

The aggregates also have to be washed with clean water to reduce their sulphate content well below the 0.1 per cent. maximum which could be tolerated with safety. Aggregate sizes arriving at the batching plant stockpiles are made up of heavy media sizes  $\frac{3}{8}$ in.-mesh 4, 1 $\frac{1}{2}$ in. x  $\frac{3}{8}$ in., and sand; and natural aggregate sizes 3in.-6in., 1 $\frac{1}{2}$ in.-3in.,  $\frac{3}{8}$ in.-1 $\frac{1}{2}$ in.,  $\frac{1}{2}$ in.-mesh 4 and natural sand.

A fleet of 14 Mack diesel tractors with 30-ton capacity Cook bottom-dump trailers is being used to haul the aggregates over the 5½ miles long road to the batching plant stockpiles at the dam site.

Cement for the Glen Canyon concrete is being produced at a special factory set



Transfer ladle car dumps its load of concrete into 12yd. bucket high over dam site

up for the purpose of Clarkdale, Arizona, by the American Cement Co., from which it is bulk delivered in Fruehauf tandem bottom-dump trailers. About 3,000,000 barrels of Portland cement at an estimated peak rate of production approaching 120,000 barrels a month will be required in all, and this is Type II cement of low alkali content.

Pozzolan is being supplied from pumice deposits near Flagstaff, Arizona, over 100 miles away.

From the delivery trailers and trucks the cement and pozzolan are transported by screw conveyor to a 16in. x 8in. bucket elevator which delivers them to the top of storage silos. There are four 10,000 barrel capacity silos for cement and three 10,000 barrel silos for pozzolan. Distribution into the silos is effected by 12in.

air slide conveyors. Reclamation is by 14in. screw conveyors discharging into 360ft. long 12in. air slides which deliver the material to the edge of the canyon, where a 120ft. nearly vertical chute, fitted with dust recovery traps, serves two 700 barrel-capacity batching plant storage silos.

### Batching Plant

Towering 217ft. high from the bearing plate to the screen tower, the batching plant was supplied by Noble and Co., of Oakland, Cal., at a cost of about \$1m., and stands in a strategic position for concrete placing on an excavated ledge adjacent to the west keyway of the dam, 170ft. below the edge of the canyon and directly below the refrigeration plant, with an aggregate storage capacity of 3,000 tons, the plant has six mixers capable of turning out 480 cu. yd. of concrete per hour. It is automatic and any one of 12 mixers can be selected by push-button, the selected mix then being delivered by the plant until the order is countermanded.

A continuous record is made of the consistency of the concrete in each mixer and of the quantities of each of the 11 concrete ingredients in stock at the plant, the time of day being also recorded every quarter of an hour. Each batch of concrete is identified by type mix. To make up for the varying moisture content of the sand, water may be added to each mixer as required and there are facilities for the rescreening of all the aggregate.

Aggregate is reclaimed from the stockpiles by means of a tunnel belt conveyor equipped with a vibrating screen where rinsing and fines elimination takes place. The material is then taken forward on a 42in. wide conveyor through a 250ft. long housing where it is sprayed with water chilled to 35-40 deg. F. to lower its temperature. Any remaining fines are then removed along with the cooling water which is recycled to the refrigeration plant.

On arrival at the top of the batching plant rescreening tower the aggregate passes in two lines through a series of screens from which it falls, according to size, into eight storage bins. Four of these contain aggregate ranging from 6in. cobbles to that retained on a No. 4 screen, two contain the heavy media gravel and the other two natural and heavy media sand. Aggregate levels are transmitted to the operator by closed circuit TV and from a panel with 14 push-buttons are controlled the various gates and conveyors bringing the material to the batch plant. Adjacent are the surge silos for cement and pozzolan.

Located under the storage bins are the rubber-lined weigh hoppers or batchers into which the aggregates are discharged, under dust control, through clamshell-type double ram-operated gates, one of which closes when the batch is approaching the approximate required weight to slow down delivery. One exception to this is the weighing of the 3in.-6in. size aggregate, at the end of which the final delivery is made in spurts through both gates, which open and close a number of times. The air in this area is kept warm to promote more maintenance free operation of the air rams, valves gates and scales. The bins are closed automatically when the correct weight in each batcher is reached. Only 10 seconds elapse between the opening of the first gate and the discharge of the batcher into the collecting hopper, whose impact area is also rubber-lined. Into the collecting hopper are also delivered the other ingredients of the mix including ice, chilled water, cement, pozzolan and air entraining agent.

On the mixing deck, six 4 cu. yd. front-end charging, Smith mixers, arranged in a circle, are able to provide 480 cu. yd. of concrete per hour, or an average of three minutes per mixer for each cycle. Charged by a revolving feed spout that travels in the circle, the mixers are 13ft. long, 12ft. wide and 12ft. high and are fitted with removable hard-faced liner plates. As soon as a mixer is empty a feeder chute is automatically positioned over it. The mixers are tilted pneumatically to feed into two 26 cu. yd. wet-batch hoppers and one 13 cu. yd. hopper, the former being used

for the mass interior concrete for the dam and the latter for the face concrete made from the heavy media treated aggregates.

The batching plant is automatic and is operated by one man in a glazed room suspended midway between the batchers and the mixers, the air being kept at a slight over-pressure to exclude dust. Every day a work schedule is supplied to the operator so that he knows the day's programme in advance. Communications are carried out at the plant by means of an inter-plant magnetic phone circuit, an intercom system, a project telephone network and a two-way radio system with the foreman supervising concrete placing.

Eleven men are normally required to deal with the entire process of batching and mixing including supervision of the various storage bins and maintenance work.

#### Refrigeration Plant

Capable of developing in excess of 4,000 tons of refrigeration, with a total connected horsepower of more than 7,000, the refrigeration plant provides for an aggregate-cooling system employing chilled water, an air-cooling system at the batch plant, a mixer-water cooling system, an ice-making and ice-batching system and an after-cooling system using more than 3,000,000ft. of lin. cooling pipes embedded in the dam.

By spraying the aggregate with ice water at a rate of 3,600 gallons per minute for one minute when on their way to the storage bins they are cooled 15 deg. F. They are also further cooled in the bins by air refrigeration to 30 deg. F., while ice water and chipped ice are added in the mixers.

With this refrigeration plant it is possible to place concrete round the clock at the specified temperature of not more than 50 deg. F. even when the ambient temperature is as high as 110 deg. F.

#### Concrete Transfer Cars

In the concrete placing operations special tilt-type transfer cars are used to carry the concrete from the batch plant over a structural steel trestle built across the right keyway at an elevation of 175ft. below the crest of the dam. These transfer cars unload into cableway buckets on a landing platform running along the outboard edge of the trestle.

Each car unit consists of a self-propelled car and an idler car and carries a ladle with a capacity of more than 12 cu. yd. Once a transfer car is positioned directly over a cableway bucket an air activated cylinder unloads the concrete, one car at a time, by tilting the ladle.

An electric system of third-rail, under-running type powers the concrete transfer cars. Single-compartment, one-gate, hydraulically-operated buckets, with a pressure building mechanism built into the bucket frame, are used to place the concrete at the dam.

#### Cableways

All three cableways used for conveying the concrete at the dam and powerhouse are equipped with movable head and tail towers. Two of them, designed and constructed by the contractors, Merritt-Chapman and Scott, are each of 50 tons capacity and this is claimed to be a record hook load for a travelling cableway. They also incorporate the most modern electrical and mechanical equipment. The hoist speeds of these two cableways, which are being used primarily for placing concrete in the dam proper attain 600ft. to 700ft. per minute, believed to be the fastest of any cableway. The third cableway, a 25 tons unit with an 8 cu. yd. bucket is employed mainly for placing concrete at the powerhouse and yarding. Hoisting speeds at this unit run to 500ft. to 600ft. per minute. Haul speeds are 1,200ft. to 1,350ft. per minute.

Constructed at different elevations so that one line can pass directly over the other, the 50-ton cableways work independently of each other. The main line linking the two A-shaped travelling towers of each unit consists of a single-lock coil steel cable 4in. in diameter and is claimed to be the largest and strongest of its kind ever manufactured.

On each cableway, the head tower, which contains the unit's mechanical and electrical equipment, is located on the east side of the Glen Canyon gorge, while the tail tower, which houses the take-up hoist for the main line, is on the west bank. To compensate for the different ground elevations on the opposite sides of the canyon edge and so as to keep the cable supports level, the towers were built to varying heights. The head tower of the higher unit, for instance is 189ft. in height, rising roughly 1,000ft. above the dam foundations, while the tail tower is 139ft. high.

Since the higher cableway is set back farther from the edge of the gorge than the lower unit, the spans of the two main lines differ in length. The higher cable stretches 2,050ft. while the lower main cable extends 1,800ft. The towers of the higher cableway travel on a 910ft.-long track made of 175lb. rail laid parallel to the edge of the canyon. The lower unit, mounted on tracks directly in front of the

higher line, has 810ft. of lateral travel.

With the exception of local stiffening for concentrated loads, all the members of the tower structure—the four legs and all the bracings—are fabricated from wide flange beams. To accommodate the required pull of the main cable, plate stiffening was used at the head of each tower. High-tensile steel bolts were used for field assembly, with shop sub-assemblies all welded or riveted.

Outrigging platforms, erected on the top of all four towers, provide maintenance facilities for the carriage assemblies. Each tower is mounted on 32 wheels made up of four identical eight-wheeled trucks equipped with electric motors. On each truck the gear-motor is directly connected to one of the four axles.

To equalise the overturning moment of the towers, reinforced concrete counterweights were poured on the vertical legs of all the towers.

The carriage assembly, which is the cableway's hauling facility, is comprised of two 10-wheel units. It rides on the 4in. lock coil cable and supports the upper main fall block. The upper main fall block, which consists of three sheaves set in tandem, is reeved by four parts of 1½in. wire rope to the lower main fall block.

A 1½in. wire rope serves as an endless conveying line between the carriage assembly and the towers. The haul hoist is equipped with two tandem drums, one of which is a driver, the other an idler drum. To permit even tension without undue strain and abrasion to the rope, each drum is equipped with walker rings, which provide an individual grooved ring for each wrap of rope.

Hoisting is controlled by a huge single drum grooved for 1½in. wire rope. The drum is 106in. in diameter, has a face width of 96in. and can wind 2,180ft. on the first layer.

Six differential carriers, three on each side of the carriage assembly, are used as moving hangers to break-up the span of the hoist rope. This use of differential carriers limits the maximum unsupported span of the hoist line to about one-quarter of the entire cableway. All the differential carriers move in the same direction as the carriage assembly and their speeds vary with the distance from the carriage. The closest, for example, moves at three-quarter carriage speed, the next at one-half speed, and the farthest at one-quarter speed. Power to move the differential carriers is derived from the motion of the haul rope.

Each 50-ton cableway is operated by one man. The controls for both units are located in a specially designed control house on the west bank, level with the trestle tracks and within sight of the landing platform where the concrete transfer cars are unloaded. On the operator's control panel are a series of levers, buttons and switches that will allow him to haul and hoist buckets loaded with 12yd. of concrete and place them virtually with pin-point precision.

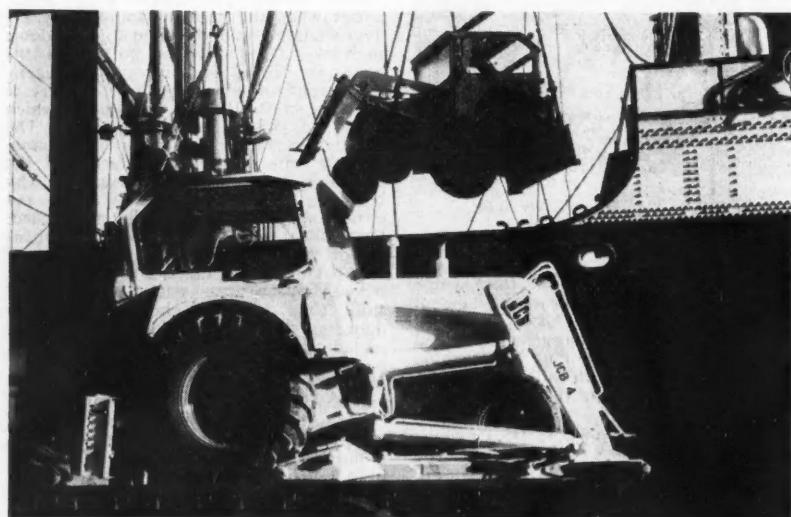
Electric power for the main hoist equipment is supplied at 4,160 volts and power for the tower propulsion motors is stepped down to 440 volts.

A key feature of the cableway operation is the automatic skewing correction. No matter which way the head tower moves, the tail tower follows in alignment. The maximum speed of the towers is about 120ft. per minute and the towers are equipped with track-type limit switches to prevent over-travel.

By this system it is possible to load two transfer cars with 24 cu. yd. at the batch plant, place their contents by cableway and return their cars in position for the next load, in just 5½ minutes.

The Glen Canyon Dam is being constructed in blocks of various sizes ranging from 45ft. to 70ft. wide, up to 160ft. long and up to 7½ft. in lift depth. There are two rows of 24 blocks each, with a complete wedge at each end in the keyways.

The design and construction of the dam were described in *The Contract Journal*, August 3, last.



These J.C.B. 4 excavators being loaded on the "S.S. Achilles" at Birkenhead are a part of a consignment of 56 machines for Japan. This order, which with spare parts is worth £148,000, was obtained by J. C. Bamford (Excavators), Ltd., through their distributors, Fuji Shoji Kaisha, Ltd., Osaka. To ensure maximum utilisation of shipping space, the digger arms are removed and stowed separately

## BIRMINGHAM DISPOSAL WORKS WILL HANDLE 300 TONS OF REFUSE A DAY

A NEW refuse disposal works, designed to deal with 300 tons of crude refuse per working day of 16 hours, has been built at Lifford for Birmingham City Council, at a cost of £560,000.

The works comprises two complete units, each extending from the reception hoppers to the incinerators and each capable of operating independently should the other be halted for maintenance purposes. It is located on a 14-acre site adjoining the city's old Lifford works, which it replaces.

Considerable preparatory work had to be carried out on the new site, part of which was formerly used for allotments, the rest serving for many years as a tip for the old works. Over 400 piles were sunk to an average depth of 40ft.; most of these are now beneath the main building, 40 of them being required for the incinerator chimney alone.

The new tipping house, set at right-angles to the axis of the main building, is approached by the same inclined roadway used for the old works. This has now been extended by a short elevated section leading to the new reception house. Vehicles entering this building tip directly into two rubber-curtained reinforced concrete hoppers, having a total capacity of 300 cu. yd. Each hopper is equipped with horizontal plate feeders, 9ft. wide, discharging automatically to elevating conveyors.

The conveyors transport the refuse into two totally enclosed rotating screens which extract the dust and allow it to fall into the hoppers beneath. These hoppers, which will contain up to 100 tons of screened dust, are fitted with 12 hydraulically-operated discharge doors, remotely controlled, for loading the dust into vehicles. The design is such that lorries may reverse right inside the building and under the hoppers, enabling the dust to be loaded without it escaping into the atmosphere.

After leaving the screens, the refuse passes along conveyors to the salvage room. The materials recovered are transferred by chutes, centrally placed between the two lines of conveyors, to the floor below ready for sorting and baling.

Two overband magnetic separators are provided above the conveyors for the extraction of tins and other ferrous scrap, after which the refuse falls on to other conveyors, where two further overband separators are placed. This results in the maximum recovery of tins, as the refuse is turned over in transit, bringing to the top tins which were previously at the bottom of the layer. The ferrous scrap and tins automatically pass down chutes to a brick enclosure in the baling room below.

An overhead gantry crane of 4 tons capacity, is provided for maintenance purposes on the separators and elsewhere in the sorting room.

Conveyors elevate the refuse "tailings" on to reversible distributing conveyors, delivering in turn to reversible shuttle conveyors, whence the refuse is automatically fed into the respective furnaces which are arranged in two banks, each of five cells.

Wherever possible mechanisation has been utilised for the various processes through which the refuse passes. This includes the automatic feeding of refuse into the furnaces, the mechanical removal of the clinker when incineration is complete and its subsequent quenching prior to removal by road haulage vehicles. Power for the operation of the moving grates is provided by two three-throw pumps, working in conjunction with a hydraulic accumulator.

Each bank of incinerators is provided with a separate clinker skip hoist. The skips operate in tunnels under the

furnaces, from which the fumes are automatically extracted, and are operated from press button control boards conveniently placed on the firing floors.

Electrical interlocks prevent the withdrawal of any grate before a skip is correctly positioned to receive clinker, and it is in this position that quenching is carried out.

The pressing of the appropriate selector button despatches the loaded skip to the concrete storage hopper, where it automatically discharges and returns to the parking station ready for the next call. Each hopper has a power discharge feeder for rapid vehicle loading.

A feature of the new plant is that trade refuse, delivered at ground level by traders' own vehicles, is transported by means of an electrically operated hoist direct to the charging floor leading to the incinerators. One of the cells has accordingly been provided with a large power-operated feeding door for dealing with this type of waste.

The products of combustion are discharged from the furnaces to a water grit

the incinerators follows the inclination of the conveyors beneath.

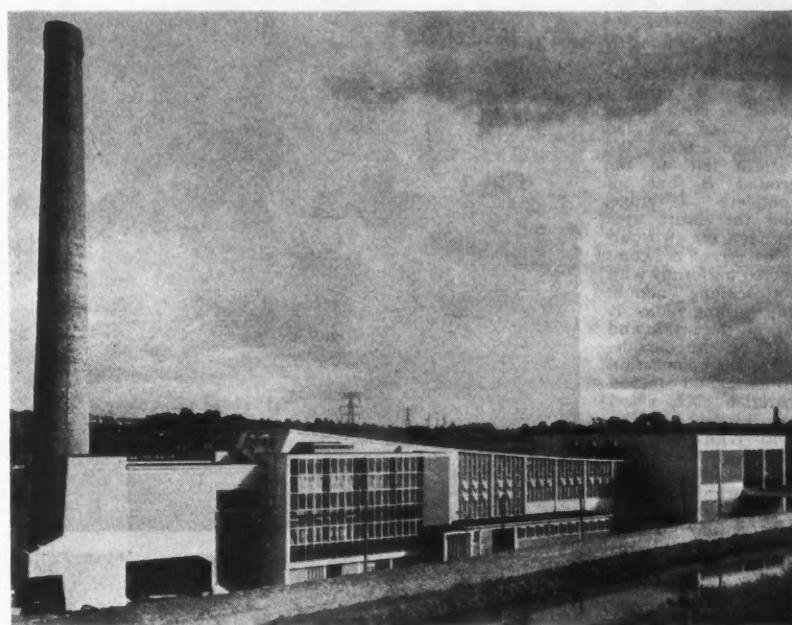
The screening and sorting area is fully side-glazed with glass bricks incorporating electrically operated opening lights. Lateral glazed curtain walling with large opening lights is used in the side walls of the two flat-roofed lower wings containing the clinker skip houses, and fixed louvre ventilation is employed. A large sloping window fitting the entire end wall lights the whole of the central portion, including the passageway between the cells.

The building is of reinforced concrete construction throughout, with all wall surfaces disc-polished to a smooth finish. Great care has been taken to eliminate dust collecting ledges and in the screening and sorting areas, inspection galleries are set back from the line of the windows to enable the whole area of glass bricks on two floors to be hosed down in a single operation.

Roofs generally are finished with three-layer bituminous felt, laid on a 3in. insulating screed. The floors of the tipping block are in monolithic granolithic. Elsewhere these are of fair face concrete construction.

All external concrete surfaces are decorated with stabilised, chlorinated rubber-based paint.

Electric power for the whole of the works



New refuse disposal plant at Lifford

catcher, designed to control the escape of dust and grit into the atmosphere from the chimney. The chimney, lined throughout with firebrick, is 180ft. high and has an internal diameter of 8ft. 6in. at the top. The incinerator units and grit catcher are all steel cased.

To ensure good working conditions for the employees, the scheme incorporates an efficient plant of the "wet deduster" type for the removal of dust from the atmosphere within the main building. This operates at every point where the refuse is disturbed from the time it is tipped into the reception hoppers. These dust suction units comprise motors, exhaust fans, wet filters and ducting.

### Main Building

The long wall and most of the end wall of the reception house have been fully glazed with glass bricks set in concrete mullions. The roof consists of three concrete shell barrel vaults, whilst the next section, comprising the screening, sorting and incinerator areas, has been roofed as a single design entity. The long upward sweep of the concave main roof towards

is obtained from a transformer station adjacent to the tipping block basement, and sub-mains supply the various multi-starter panels in each of the main sections of the plant. A comprehensive system of sequence starting and stopping is incorporated in the control gear, and all motors are of the totally enclosed fan-cooled induction type.

### Contractors

The specification of the new Lifford plant was prepared by the general manager of Birmingham's salvage department, Alan E. Barton, F.Inst.P.C.

Main contractors for the construction of the refuse handling and incineration plant, the erection of the chimney and the provision of the grit and dust control equipment, were Heenan and Froude, Ltd., Worcester. The main building and civil engineering works were carried out by Wilson Lovatt and Sons, Ltd., Wolverhampton, under the supervision of the City Architect, Mr. A. G. Sheppard Fidler, M.A., B.Arch., F.R.I.B.A., A.M.T.P.I., who was also responsible for the design of the buildings.

**Trade and Company News****PNEUMATIC-TYRED ARTICULATED COMPACTOR****New Hyster Machine Demonstrated at Slough**

A DEMONSTRATION of compaction equipment held recently at Slough By-Pass by H. Leverton and Co., Ltd., Windsor, the Caterpillar/Hyster dealers, provided consultants and county authority representatives with the opportunity of seeing the first model of a new Hyster compactor to be imported into Europe.

This is the nine-wheeled, C500A pneumatic compactor, an articulated machine designed, not as a prime compactor, but as a sealing roller to produce a fine finish at speed.

It is built in two sections, joined at the geometric centre in a pivot point. One section contains the power unit, drive train, hydraulic system, a 300-gallon water and 40-gallon fuel tank, and the other houses primarily the ballast material.

The centre point steering gives identical steering in either direction, the trailing wheels following the path of the lead wheels in forward or reverse. Whether the direction is straight ahead or on a curve, the tyres are so arranged that the pattern left on the ground is one of complete coverage, and the entire area between the two outside tyres is compacted uniformly with no scuffing action. The turning radius is 9ft. on the inside and 16ft. on the outside.

For the compaction of loose and uneven material, each wheel has vertical oscillation. With this feature, each wheel has 4in. of vertical movement, which permits rolling over obstructions or into depressions and still keeps the wheels equally loaded, with each giving the same compactive force to the ground.

The operator is able to control the air pressure in the tyres while the machine is moving, by means of an Airmatic system. A pressure regulator in the operator's cockpit varies tyre pressure from 35 to 130 p.s.i. and provides identical pressure in each tyre. It takes about four minutes for the operator to increase tyre pressure in all nine tyres from 35lb. to 85lb.

The importance of the tyre pressures is shown by the following figures. A 9.00 x 20 tyre, inflated to 40lb. pressure with a 2,000lb. wheel load will have a ground contact pressure of 48.5lb. p.s.i. With the same load, but the tyre pressure increased to 100 p.s.i., the ground contact pressure increases to 70.5 p.s.i. Optional 16-ply tyres are available for the C500A to permit higher inflation pressures.

The hood and radiator guard are a single unit which is easily opened, being counterbalanced with a torsion bar. Maintenance is therefore made easy. The entire compactor is lubricated with only 12 grease fittings, and any of the nine tyres can be changed easily.

The standard power unit is the Caterpillar D311E diesel engine, and the optional petrol engine is the 75 h.p. F-244 Continental.

Direction of travel and speed is controlled by the throttle. The speed range

is determined by the manual selection of any of the four speeds of the transmission. The final drive is all-gear driven and runs in oil. Wheel spinning when starting is eliminated by the power shift, which provides a gradual application of power. A limited slip differential is provided between each pair of drive wheels.

Dual adjustable seats are located on either side of the lowered operator's cockpit and dual controls are within easy reach. From these seats the driver can see the edges of the tyres when rolling tight places.

Hydraulic steering is fitted and the steering wheel is centred in the instrument panel. Forward, reverse and throttle are controlled by single levers on both sides of the instrument panel.

Transmission speeds are manually selected by a lever directly under the steering wheel. The brake pedal is located on the floor below the steering wheel and



Hyster C500A pneumatic compactor

controls the hydraulic brake system. Hydraulic brake adjusters keep the service brakes properly adjusted at all times.

To keep material from sticking to the tyres when compacting hot mix asphalt, the machine is equipped with spray nozzles for each tyre, supplied from the 300-gallon water tank. The pressurised water system caters for a full eight-hour shift. Coco mats sweep the tyres.

The full rolling width is 77in. or 12ft. in two passes. Standard weight of the machine, with the D311E engine, is 17,650lb. Ballast weights totalling 15,700lb. are available, and the addition of 4,200lb. of sand will give a loading of 4,500lb. per wheel.

**PLASTER GROUP RE-ORGANISATION**

With the re-organisation of the United Kingdom gypsum rock, plaster and plasterboard companies of The British Plaster Board Group, a new company—British Plaster and Boards, Ltd.—has been formed. The new company has taken over the trading activities of: The British Plaster Board (Manufacturing), Ltd.; The Gotham Co., Ltd.; The Carlisle Plaster and Cement Co.; Thomas McGhie and Sons, Ltd.; The Long Meg Plaster and Mineral Co., Ltd.; and Marblaeigis, Ltd.

**BURNER CONTROLS FOR BARBER-GREENE DRYERS**

AUTOMATIC burner controls are now available for all models of their aggregate dryers for asphalt mixing plant, it is announced by the Barber-Green Co., Aurora, Ill., U.S.A.

These controls, which are recommended for all plants where the dryer is frequently operated on continuous runs, consist of electronic equipment which continuously measures and records the temperature of the aggregate being discharged from the dryer and automatically makes the necessary burner control adjustments to maintain the temperature within pre-set limits.

In addition, a combustion safeguard unit shuts off the fuel supply to the main burner if the pilot flame is not operating during start-up and shuts down the entire burner in case of main flame failure. A stack high temperature limiter constantly guards the plant against damage by assuring immediate burner cut-off should exhaust temperature become excessively high.

Also available is a remote-manual control system for plants in which the dryer is not normally operated continuously. With this system, aggregate discharge temperature is maintained manually from a remote control station. Because the controls may be located on the mixer operator's platform, at the cold feed, or in any other convenient location, it is not necessary to station an operator at the burner.

**ONE TON LOW LOADER**

George Dixon (Plant), 30-38 Bell Hill Road, St. George, Bristol, are marketing a one-ton Tuff low loader, designed to carry all the equipment of a medium sized builder. It has a loading height of under 12in. and a floor area of 5ft. 6in. by 9ft.

The four heavy duty wheels, with 16 by 4 by 6 ply tyres are mounted on Flexitor independent suspension unit. Loading skids give less than a 1 in 6 gradient and loading is assisted by a fitted hand operated geared winch. The flooring is 1in. hardwood.

**TROLLEY-MOUNTED FLYGT PUMPS**

Illustrated below is one of six trolley-mounted Flygt B38L pumps supplied by Industrial Pumps, Ltd., of Nottingham, for use at Richborough Power Station.

Nothing like this has ever been made by Flygt Pumps before, but when the order was received Mr. W. B. Sidebottom, managing director of Industrial Pumps, Ltd., sketched his own idea of what was required and the trolleys were specially manufactured.

The main function of these trolley-mounted pumps will be the draining of main circulating water culverts at the power station.



**Bergen Tempered, Ltd.**, makers of pipe supports for chemical works, power stations and similar installations have moved to new premises in Sussex Road, Sheffield, 4, where increased floor space and production facilities are available.

Trade and Company News

## WIRE ROPES RESEARCH CENTRE OPENED AT DONCASTER

**C**OMPREHENSIVE testing of and research into the quality of wire ropes is to be carried out in a new £200,000 centre recently opened at Doncaster by British Ropes, Ltd. These investigations will range from the raw material through heat treatment and wire drawing to the final product.

The centre is divided into two departments—one for wire and for rope research.

The quality of hard drawn wire is governed to some extent by the quality of the raw material—wire rods. This department is therefore making an extensive study of the characteristics of the regular supplies of rods, particular attention being devoted to the number and type of surface defects. It is long-term work, but work which it is hoped will result in an improvement of raw material quality.

While the metallurgy of plain carbon steels is fairly simple, the continuous nature of the heat treatment process used in wire production is considerably more complex than the heat treatment of individual components. A special recording pyrometer has been developed to reveal temperature changes in material as it proceeds through the plant, and with this and supplementary work in the laboratory evidence is being produced to enable considerable improvements to be made.

Apart from finished wire quality, the precise physical characteristics of various types of wire are of great importance and much of the department's time is spent on the determination of, for example, fatigue strength, stress relaxation and stress/strain factors. Haigh-Robertson rotating bending machines and an Amsler Vibrophore push-pull machine are in constant use for fatigue testing. An air-conditioned room houses the equipment used for determining the stress relaxation properties of prestressed concrete wire; apparatus is available for the testing of both individual wires and strand.

Complete metallurgical examinations of wire, both before and after service, are made from time to time. Under one such examination each wire is taken from a length of a multi-strand rope to be examined for physical properties, metallurgical structure and chemical analysis.

In addition to the apparatus already mentioned the department has a range of physical testing equipment, including bend test and torsion test machines and numerous tensile testing machines. Among the latter is an Instron machine which is based on the new strain gauge cell weighing system; this enables the stress/strain properties of wire to be determined with high speed and accuracy.

As the production of high tensile steel wire becomes more developed, the internal micro-structure of the metal increases in importance. The limits of discernment of the light microscope have been reached and it is considered that only by the use of the electron microscope can further advances in the technology of wire production be made. Accordingly, British Ropes, Ltd., have installed an Elmiskop II electron microscope manufactured by Siemens and Halske of Karlsruhe in Germany. The Elmiskop II can resolve details only one-tenth of a millionth of in apart and the

maximum useful magnification is about 50,000 x.

### Rope Department

The other half of the centre, the rope department, is divided into six sections: Chemical analysis; metallurgical examinations; physical testing; fibre and synthetics' evaluation; photographic documentation; development.

The work of the rope research department is split up as follows:



Examining a mounted wire specimen on a Vickers projection microscope

1. *Chemical analysis section*—carries out general chemical and metallurgical analyses, but also specialises in laboratory studies of rope lubricants and dressings, plus the all-important subject of corrosion and its prevention.

2. *Metallurgical section*—works closely with the physical testing section on the metallurgical aspects of fatigue in ropes, and with chemical analysis section on corrosion. Undertakes specific research projects such as a study of the factors which influence the stress corrosion of high tensile copper-nickel wire.

3. *Physical testing section*—tests wires, strands and ropes for physical characteristics such as ultimate tensile strength up to 100 tons load, modulus of elasticity, etc. Carries out pulsatory and reverse bend fatigue tests. Studies and evaluates lubricants.

4. *Fibre and synthetics section*—deals particularly with the chemical and physical evaluation of rope cores, with special reference to synthetics. Does laboratory and field tests of microbial agents and rot-proofing.

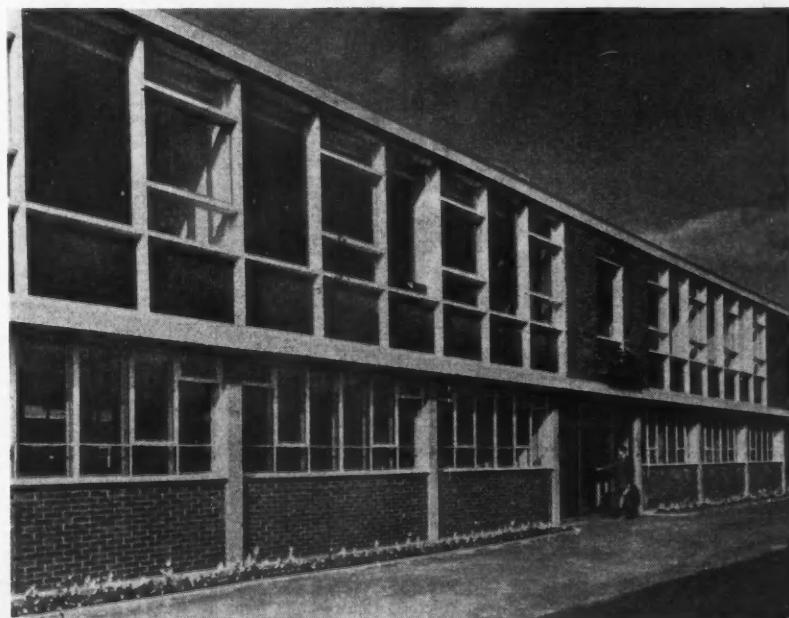
Equipment of the rope research department is extensive and varied, and includes a Zeiss photo-micrographic unit, capable of examining specimens by transmitted or reflected light at magnifications up to 4,400 x; a 100-ton capacity Amsler Universal pulsatory fatigue testing machine, capable of applying static and dynamic loads to ropes of up to 2½ in. diameter; a Watson stereoscope microscope with camera attachments and a Denison 15-ton capacity hydraulically operated tensile machine.

### THIXOTROPIC PAINT DOCUMENTARY FILM

A 22-minute colour documentary entitled "Why Thixotropy?" has been produced for Cray Valley Products, Ltd., St. Mary Cray, Kent, by Films of Industry, Ltd., Bromley Kent.

The film is to be exhibited to wholesale and retail paint distributors and will be dubbed in several languages for overseas distribution. Its aim is to show "the fundamental improvements in performance which derive from thixotropic systems, and also to demonstrate the time and labour economies which can be effected by their use".

One sequence in the film shows how the thixotropic resin, as a medium in paint, is examined in a range of laboratory tests, e.g. opacity charts, dyeline tests for sagging, settlement tests, etc. The reasons for easier brushing, resistance to sag and pigment settlement are illustrated and emphasis is given to the saving of time which results from heavier brush loading and less frequent recharging of the brush.



Exterior view of wire division research department

**Trade and Company News****NEW COMPANIES**

*The undermentioned particulars of new companies recently registered are taken from the daily register compiled by Jordan and Sons, Ltd., company registration agents, 116 Chancery Lane, London, W.C.2:-*

Nicholson's (Ilford) Ltd., 38 Hamilton Road, Ilford, Essex, builders. £1,000. Directors: Frederick A. Nicholson and Derek J. Nicholson, 38 Hamilton Road, Ilford.

D. N. Spencer and Son, Ltd., builders and contractors. £2,000. Directors: Desmond N. Spencer (permanent) and Brian T. Spencer, 6 Holly Road, Kettering; Olive R. Spencer, address not stated.

Manor Plant Hire Ltd., 23 Francis Road, Windsor, Berks. £5,000. Directors: John D. Jones, Merryacre, Farnham Royal, Bucks.; William H. Jones, Greenways, Church Lane, Stoke Poges, Bucks.; Maurice M. Jones, 18 The Fairway, Burnham, Bucks.

W. Yoxall and Son, Ltd., 38 John Street, Crewe, builders and contractors. £6,000. Directors: Thomas Yoxall (permanent) and Mrs. P. M. Yoxall, 17 Freshfields, Wistaston, near Crewe.

John Kerr and Co., Ltd., 35 Windmill Street, W.I., builders. £1,000. Directors: John Kerr-Nagy and Miss A. Brown. Subscribers: John J. Stansfield, 2 Lambert Road, Brixton Hill, S.W.2 (accountant); Donald F. Hird, 187 Gorseyway, Rush Green, Romford, Essex (accountant).

J. H. Ransome and Sons (Ingoldisthorpe), Ltd., Ingoldisthorpe, Kings Lynn, Norfolk, builders. £5,000. Directors: John H. Ransome and Mildred M. Ransome, Main Road, Ingoldisthorpe, Kings Lynn.

Barnet Plant Hire Co., Ltd., 93 High Road, Barnet, Herts. £1,000. Permanent directors: William Linney, 21 Athanaeum Road, N.20; Bernard McLaughlin, 74 Sandringham Gardens, N.12.

Comino Construction Co., Ltd., 4 The Quadrant, Coventry, builders. £5,000. Directors: Ronald M. Wilson, 48 Cannon Close, Coventry; Alfred G. Bird, 2 Church Lane, Shareshill, Wolverhampton.

A. C. Yates and Co. (Monmouth), Ltd., 12 Cathedral Road, Cardiff, building contractors. £500. Directors: Alexander C. Yates, Sylvia Yates and Henry Bray, 12 Cathedral Road, Cardiff.

Derek Crouch (Sales), Ltd., The Lawns, Eye, Peterborough, dealers in, manufacturers, hirers and repairers of plant and machinery, etc. £5,000. Director: Derek C. H. Crouch, Newcroft, Eastfield Road, Peterborough.

Cotton and Marshall, Ltd., 122 Lansbury Grove, Meir, Stoke-on-Trent, building contractors. £1,000. Directors: Frederick Cotton, 122 Lansbury Grove, Meir, Stoke-on-Trent; Edwin S. Marshall, 7 Lansbury Grove, Meir, Stoke-on-Trent.

M. A. Fordham (Plant), Ltd., 19/23 Ludgate Hill, E.C.4. £100. Director: Malcolm A. Fordham, The Laurels, Well End Road, Well End, Herts.

H. Fox and Sons (Builders), Ltd., Cemetery Road, Knowle, Bristol, 4. £7,000. Directors: Reginald H. Fox and Mrs. Winifred E. Fox, 330 Wells Road, Knowle, Bristol, 4.

Keer and Collins, Ltd., 244 Cauldwell Hall Road, Ipswich, building contractors. £5,000. Directors: Frederick W. Collins, and Ruby M. Collins, 244 Cauldwell Hall Road, Ipswich.

Economic Structures, Ltd., 5 Swasedale Road, Luton, civil engineers, etc. £1,000.

Director: Patricia M. Aplin, 188 Old Bedford Road, Luton.

A. E. Charman (Lingfield), Ltd., Wilmington House, High Street, East Grinstead, builders. £1,000. Directors: Alfred E. Charman, 33 Station Road, Lingfield; Herbert J. Arnold, 61 Bakers Lane, Lingfield; Doris E. M. Arnold, 61 Bakers Lane, Lingfield; Frederick C. Charman.

Headley Development Co., Ltd., Knightsbridge House, Headley, Newbury, Berks., builders. £5,000. Directors: James W. Pritchard, Knightsbridge House, Headley, Newbury.

Summers and Son (Hinckley), Ltd., 142 Charles Street, Leicester, builders, builders' merchants, etc. £500. Directors: Clifford J. Summers, 459 Coventry Rd., Hinckley, George E. Summers, 56 Queens Road, Hinckley.

Beck and Leslie, Ltd., Old Fire Station, Junction Street, Carlisle, builders. £2,000. Directors: Tom Beck and Mrs. Myra Beck, 25 Beck Road, Carlisle; Derck Leslie and Mrs. Doreen Leslie, 23 Beck Road, Carlisle.

Raynor Barrett and Co., Ltd., Birchwood Grange, Skellingthorpe Road, Lincoln, builders. £5,000. Directors: Ronald A. Raynor, 2 Orion Crescent, Potters Green, Coventry; Elsie M. Barrett, Birchwood Grange, Skellingthorpe Rd., Lincoln.

N. H. N. Painting Co., Ltd., 38 Queens Road, Portland, builders. £1,000. Directors: Barnard W. J. Higley, 38 Queens Road, Portland, Dorset; Benjamin Nash, 6 Artist Row, Portland; Leonard Nash.

J. W. Foster (Builders), Ltd., 112 Colmore Row, Birmingham, 3. £1,000. Directors: James W. Foster and Mrs. Vera Foster, 119 Longmore Road, Shirley, Solihull.

S. Fitzgerald, Ltd., 11a St. Albans Road, Watford, excavators, builders and contractors. £500. Directors: Stephen Fitzgerald and Mrs. B. T. Fitzgerald, 4 Westland Road, Watford.

Aldridge Plant Hire Co., Ltd., Northgate, Aldridge, Staffs. £100. Directors: Dennis T. Bullock, 44 Thorney Road, Streetly, Sutton Coldfield; Raymond M. Brant, 489 Lichfield Road, Four Oaks, Sutton Coldfield; Ralph Downes and Kenneth Hayes.



This Barber-Greene 774 dumper is being used on the 80-mile Esso pipeline contract, from Fawley to Severnside, by the contractors, Constructors John Brown, Ltd. Stripping topsoil to a width of 24in., the machine has attained a rate of 28ft. a minute, while on subsoil excavation to depths up to 4½ft. an average of 10ft. a minute has been maintained in hard soil. A second dumper of the same model is working from the other end of the pipeline.

John Littler (Plant) Ltd., plant hire (permanent) and Mrs. Elizabeth Littler, specialists, etc. £3,000. Directors: John Littler Alveston, Stratford-on-Avon.

Benjamin Shipman and Sons Ltd., 137 Main Street, Ratby, Leics., builders and contractors. £3,000. Directors: Thomas W. Shipman and Benjamin W. Shipman, Main Street, Ratby.

Cooke's (Luton) Ltd., 22 Dunstable Road, Luton, Beds., public works contractors, builders, etc. £1,000. Director: John Cooke, Dunstan House, Harlington Road, Toddington, Beds.

Withers, Brinkman and Willets Ltd., 16 Denbigh Drive, West Bromwich, general builders, public works contractors, etc. £1,000. Directors: Clifford J. Withers, 16 Denbigh Drive, West Bromwich, Reginald J. E. Brinkman, 69 Parkside Road, Birmingham, 20. Kenneth R. Willets, 39 Windsor Road, West Bromwich.

J. Mallard Ltd., 165a Junction Road, N.19, builders. £7,000. Permanent Directors: Albert W. Smith and Mrs. May L. A. Smith, 42 Arnos Grove, N.14.

H. Johnson and Son (Hull) Ltd., 395 Bricknell Avenue, Cottingham, E. Yorks., painters and decorators. £2,000. Directors: Harold P. Johnson and Mrs. Mary Johnson, 395 Bricknell Avenue, Cottingham, E. Yorks.

Frank Johnson (Builder) Ltd., 54 Old Broad Street, E.C.2. £1,000. Directors: Frank Johnson and Margaret Johnson, 62a Walpole Road, Bromley, Kent.

**TRADE NEWS IN BRIEF**

The manufacturing plant, head office, sales division and export department of **Aerograph-DeVilbiss Co., Ltd.**, have been transferred to a new factory and offices at West Howe, Bournemouth. The existing sales division office at 47 Holborn Viaduct, London, E.C.1, will continue to handle all business in London and the Home Counties.

A new office block for **City Contractors and Plant Hire, Ltd.**, has been opened at Suffolk, Belfast. The company are the Northern Ireland agents for Smith cranes and excavators.

"Gravel Pits and Nature" is the title of the fourth of a series of booklets to be published by the **Sand and Gravel Association of Great Britain**, 48, Park Street, London, W.1. It illustrates how the pits provide a safe and suitable environment for birds of all kinds.

A new edition of "Natural Rubber for Roads—A Review of Research and Experiment" is available free of charge from **The Natural Rubber Bureau**, 19 Buckingham Street, Adelphi, London, W.C.2.

The **Gas Council** brochure, "Introducing the Remarkable Se-Duct Flue System," available from Area Gas Boards, or from the **Gas Council** (price 2s. 4d.), explains the advantage of this method, with examples and illustrations of its application.

The new address for the head office and registered offices of **Mercantile Credit Co., Ltd., Mutual Finance, Ltd., Mercantile Leasing Co., Ltd. and Overstone, Ltd.**, is Elizabethan House, Great Queen Street, London, W.C.2. Tel: Chancery 1234.

The Northern Contracts Office of **Permanite, Ltd.**, is being transferred, on November 6, from Salford to Ledson Road, Baguley, Manchester 23. Tel: Wythenshawe 5538.

The problem of how many tiles go into a given floor area and shape, and which is the best kind of pattern to lay in different physical circumstances, is simplified in a 12-page booklet, "Hints on Tiles," just published by **Krommenie Flooring (U.K.) Ltd.**, Clifton House, Euston Road, London, N.W.1.

The tilting platform tests for fork lift trucks which have been adopted by the **British Industrial Truck Association** are contained in a new booklet published by the Association. Copies are available from 94-98 Petty France, London, S.W.1, price 2s. 6d. each.

An illustrated brochure describing their C.D.A. system of permanent timber construction for houses and flats has been published by **Simms, Sons and Cooke, Ltd.**, Sherwood Nottingham.

**Tayban Pre-cast, Ltd.**, Garstang Road, Pilling, near Preston, Lancs., have acquired the businesses formerly trading under the names of Pilling Pre-cast, Ltd., and Brierley's Pre-cast, Ltd.

**The Rawlplug Co., Ltd.**, have recently purchased additional freehold factory premises known as Brent Works, Colindale Avenue, Hendon, N.W.9, formerly the property of **The Tiley Lamp Co., Ltd.**.

The Aberdeen depot of **Scaffolding (Great Britain), Ltd.**, has been moved into larger premises at Greenbank Road, Tullio, Tel: Aberdeen 27555.

## PLANT AND MACHINERY WANTED—FOR SALE—FOR HIRE

(Continued from page 169)

**C R A N E S F O R H I R E.**  
 15cwt. GM Neals Fully Mobile Diesel Cranes.  
 18ft. Jones Straight and 20/40ft. Telescopic Jibs.  
 15ft. Jones Straight Self-propelled Diesel Cranes.  
 15/20ft. Jones Diesel Mobile Cranes, on pneumatics.  
 2-ton Neals Diesel Mobile Cranes, on pneumatics.  
 5-ton Neals Diesel Mobile Cranes, on pneumatics.  
 30/35ft. Straight Lattice Jibs.  
 3-ton Jones Diesel Crawler-mounted Cranes, 30/40ft. Straight Lattice Jibs.  
 4-ton Jones KL44 Diesel Crawler Cranes, 30/45ft. Straight Lattice Jibs.  
 4-ton Jones Diesel Mobile Cranes, on pneumatics.  
 30/45ft. Straight Lattice Jibs.  
 Smith, 21, approx. 10-ton capacity Crawler-mounted Cranes.  
 70ft. Box Lattice, with 10ft. Fly Jibs also available.  
 5-ton Coles Mk. VII Diesel Lorry-mounted Cranes, various length Jibs.  
 10-ton Coles Diesel Lorry-mounted Cranes, various length Jibs.  
 Hire your Cranes at most competitive rates from the Crane Specialists.

**M O O R E S , L T D .**  
 105-125 Markfield Road, Tottenham, N.15.  
 Tel.: TOTtenham 0401 (10 lines).

**C O N C R E T E M I X E R S F O R S A L E .**  
 5/31 Wingets, two or four steel wheels, fitted with petrol engines or electric motors. Checked and serviced ready for use. Choice of several.  
 5/31 Liners, on four steel wheels, fitted with Petter and Lister petrol engines and Petter diesel. Choice of several good machines.  
 5/31 Liner high-speed trailer model, fitted with Petter petrol or diesel engine.  
 5/31 Wall-Ace, on four steel wheels or four pneumatics. Choice of three machines, with Petter petrol or diesel engines. Overhauled and in good condition.  
 5/31 Goodwin-Barsby, on four steel wheels or four pneumatics. Choice of several overhauled machines. Petrol or diesel.  
 5/31 Benford, on four steel wheels. Choice of several overhauled machines, with petrol or diesel engines. Many other machines in stock.  
 New Barford 4/3 and 5/31 Mixers from stock.

**W. V. DAVIES,**  
 Concrete Mixer Service,  
 Shipston-on-Stour. Telephone 525 and 612.

**U S E D P L A N T F O R S A L E .**  
 15 3-ton 4-wheel TRAILERS.  
 Five 5-ton 4-wheel TRAILERS.  
 One 2-ton Jones 20 ft. TOWER CRANE, Mobile.  
 Wood Top, Hebden Bridge, Yorks.  
 Tel.: Hebden Bridge 2/8/9.

**B U I L D O Z E R S , M E C H A N I C A L L O A D I N G SHOVELS and TRAXCAVATORS, etc., TIPPING LORRIES, 5/7-ton, for HIRE.—HENRY FROUD, LTD., Marrow Manur Way, Abbey Wood, S.E.2. Tel.: WOOLwich 9558-9.**

**F O R S A L E .**—We have a few DRAGLINE BUCKETS for Lima or similar machines, 2½yd. and 2yd., complete with Dressings.

**PLANT SALES, LTD.**  
 25 Castlereagh Street, London, W.1. PAD. 2663/5.

**F O R HIRE.** Liebherr BA and Record 205 TOWER CRANES. Massey-Ferguson DIGGER-SHOVELS, COMPRESSORS, DUMPERS, MIXERS, etc.—P. A. KENT (PLANT HIRE), LTD., Heath Court, Brixham 2514.

**F O R S A L E .** Allen 3/12 TRENCHER, as new. For Demonstrations arranged. Write Box P.5109, "The Contract Journal."

**A V A I L A B L E f o r HIRE and CONTRACT:** D9 and D8 TRACTORS with Blade or Scraper.—ELLIOTT, Wetherby Road, York. Telephone 78220 and 78501.

**CLASSIFIED ADVERTISEMENT RATES:**

**P L A N T A N D M I S C E L L A N E O U S**  
 Four lines or less 14/-, and 3/- for every additional line.  
 Box number 1/- extra.  
 Display £2 10s. per single column inch.

**J. I. JOHNSTON AND COMPANY, LTD.** OFFER FOR HIRE:  
 Neals QM 4/6-ton capacity MOBILE CRANES, 24ft. 6in. Jibs, heavy duty tyres.  
 Jones KL44 MOBILE CRANE, 30/40ft. Jib, pneumatics.  
 Rapier S-ton, 6-ton and 7½-ton capacity MOBILE CRANES.  
 Neals G 15cwt. capacity PORTABLE CRANES.  
 Julius Weitz G15HVA TOWER CRANES.  
 Drott 1 cu. yd. Tractor SHOVELS.  
 Rapier 3 cu. yd. Crawler-mounted EXCAVATORS, all equipments.  
 DUMPERS, 15cwt., to 22½cwt. capacity.  
 COMPRESSORS, 2-tool and 4-tool, portable and lorry-mounted.  
 CONCRETE MIXERS, 5/31 to 14/10 cu. ft. capacity.  
 SWING WEIGHBATCHERS, 14 cu. ft. Double Bucket.  
 Rapier Centrifugal PUMPS, 2in. and 3in.  
 Wickham Diaphragm PUMPS, 3in. and 4in.  
 Stothert and Pitt 6½cwt. Vibrating ROLLERS.  
 Johnson Poker VIBRATORS, 11½in. to 31½in.  
 271 Uxbridge Road, London, W.12.  
 Tel.: Shepherd's Bush 6941.

**S E V E N O A K S H Y D R A U L I C P L A N T , L I M I T E D .**  
 Stothert and Pitt 10/12 Fast Towing MIXER, Closed Drum, Petter Diesel, overhauled, drum reconditioned, £150.  
 Parker 5/3½ MIXER, Wolseley Petrol Engine, good running order, £40.  
 10/7 MIXER, Winger CD7, Diesel, good working order, £80.  
 Liner 2T MIXER, Villiers Petrol, recently overhauled, £30.

Kent Distributors Road Machines Dumpers, Monorail, Loadalump, Lister LD and D Engine Spares stocked. Plant Repair Specialists, Arc and Gas Welding. Hire. Ryecroft Duntont Green 409.

**F O R S A L E .** One 3-ton Neals CRANE, Type NMS, Jib (lattice type) 35ft., manufactured 1957, with Ruston Diesel Engine (electric starting). Audible Safe Working Load Indicator, reconditioned, in first-class condition, price £2,500.—VANESCO, LTD., Beddington Lane, West Croydon. Tel.: Thornton Heath 6282.

**A V A I L A B L E F O R HIRE:** EXCAVATORS, BULLDOZERS, DUMPERS, MILERS, Coles CRANES, etc. All classes of LORRIES. Including load-lifters. AMEY'S AGGREGATES, LTD., Lower Wootton, Boars Hill, Oxford. Oxford 35421.

**F O R S A L E .** Ransomes-Rapier 423 EXCAVATOR, with Skimmer Equipment, with Perkins P6, in very good condition. Price £420. Write Box P.5128, "The Contract Journal."

**M O D E R N J.C.B. 4 EXCAVATOR REQUIRED** by civil engineering contractor. Price must be reasonable.—Written details, please, to Box P.5124, "The Contract Journal."

**R. C R I P P S A N D C O . , L T D .** have the following Items of Used Plant for SALE:  
 International TD24 TRACTOR, with Front Winch Operated Cable/Bullgrader and Onions 18 C.C.U. Rebuilt, £4,500.

International BTD6 Drott SKID-SHOVEL, fitted with new 4-in-1 equipment, fully reconditioned and guaranteed, £2,750.

International TD24 Drott SKID-SHOVEL, with 1 cu. yd. Heavy Duty Bucket. Fully reconditioned and guaranteed, £2,450.

International BTD6 Drott SKID-SHOVEL, fitted with 1 cu. yd. Heavy Duty Bucket, track running gear extensively overhauled, good engine, £1,950.

International BTD6 TRACTOR, with Drott 1 cu. yd. Heavy Duty Bucket. Extensively overhauled and repainted, £1,850.

International BTD6 TRACTOR, with Hydraulic Bullgrader Equipment. In first-class condition all round, £700.

John Deere Lanz 831 Tractor SHOVEL, complete with Scooper. Only worked 1,150 hours. Repainted and in immaculate condition, £1,500.

Hydraulic BULLGRADER EQUIPMENT for International TD70 Tractor, £150.

Caterpillar D4 TRACTOR, 71 Series, fitted with Hydraulic Angledozer Equipment. In very good condition, £250.

Further details available from R. CRIPPS AND CO. LTD., as follows:

Nottingham (Tel. 71161); Manchester (Tel.: Trafford Park 1658); Shildon (County Durham) (Tel. 261).

**LIGHT RAILWAY MATERIAL FOR SALE.** 3,000yd. 25lb. B.S.S. TRACK, 24in. gauge. 1,000yd. 20lb. B.S.S. TRACK. 1,000yd. Listed Diamond LOCOMOTIVE from £455.

One Montana Diesel LOCO, 2½-ton, 24in. gauge. 20 1yd. TIPPING WAGONS.

2yd. 24in. gauge TIPPING WAGONS.

Macq Pressed Steel Lay-on SWITCHES.

Macq Pressed Steel Lay-on TURNABLES.

POINTS and CROSSINGS and TURNABLES.

WHEELS and AXLES, all gauges.

Macq AXLEBOXES.

PLATELAYERS BOGIES, 4ft. 8½in. gauge.

457 Finchley Road, London, N.W.3.

Menglim, London. Phone: HAMpstead 7481-2-3.

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MUIRHILL 3yd. DUMPERS, Ford Diesels, 1958, £850 each.  
100B MCKIERNAN-TERRY PILE HAMMER, £500.  
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APPLEBY-FRODINGHAM 1A PILING, approx. 50 tons, 17/18ft. lengths. Price on application.  
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APPLEBY-FRODINGHAM 1A PILING, approx. 50 tons, 17/18ft. lengths. Price on application.

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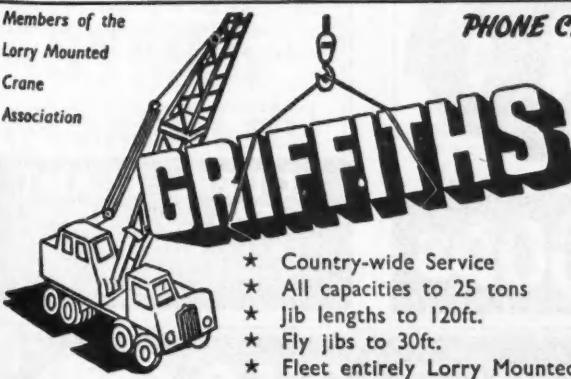
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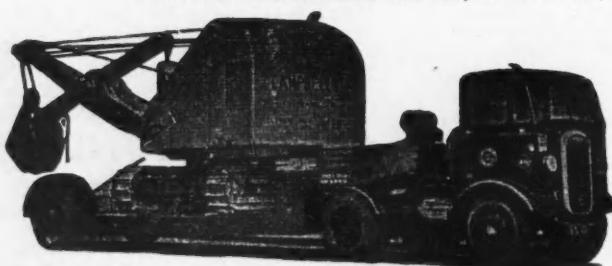


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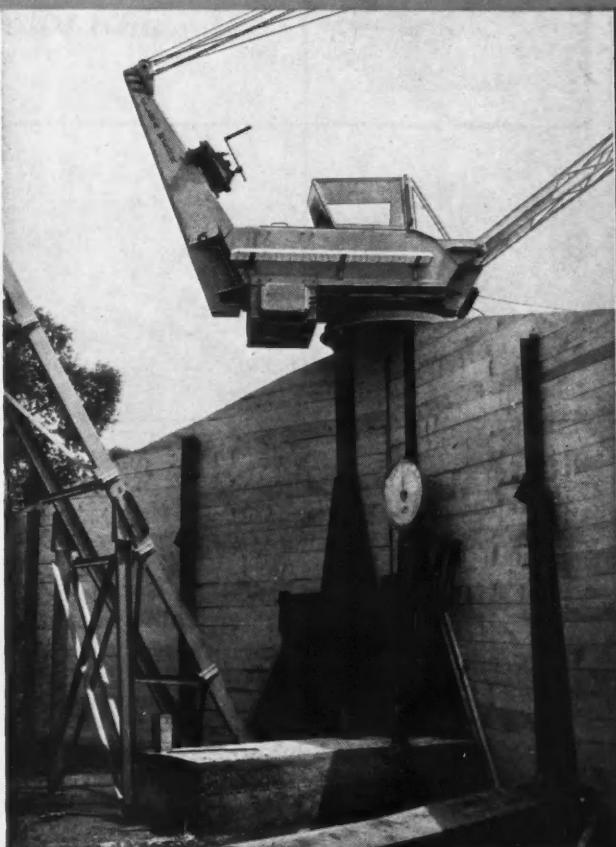
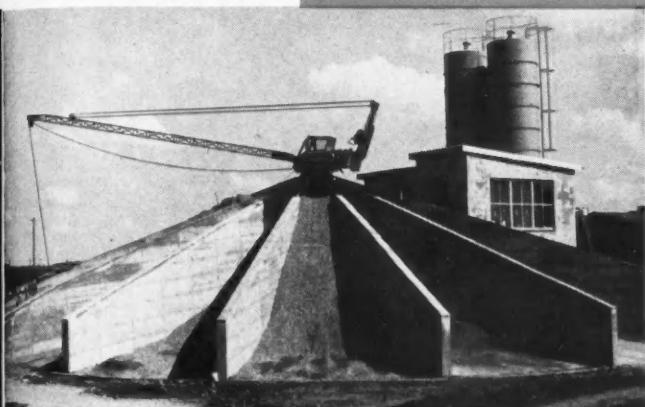
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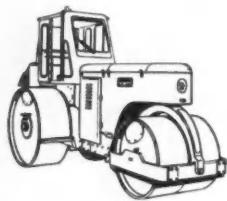
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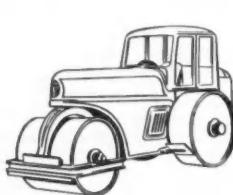


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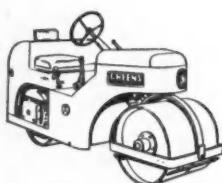
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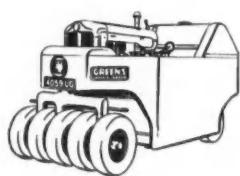


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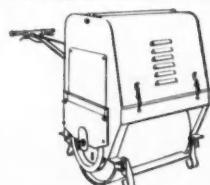


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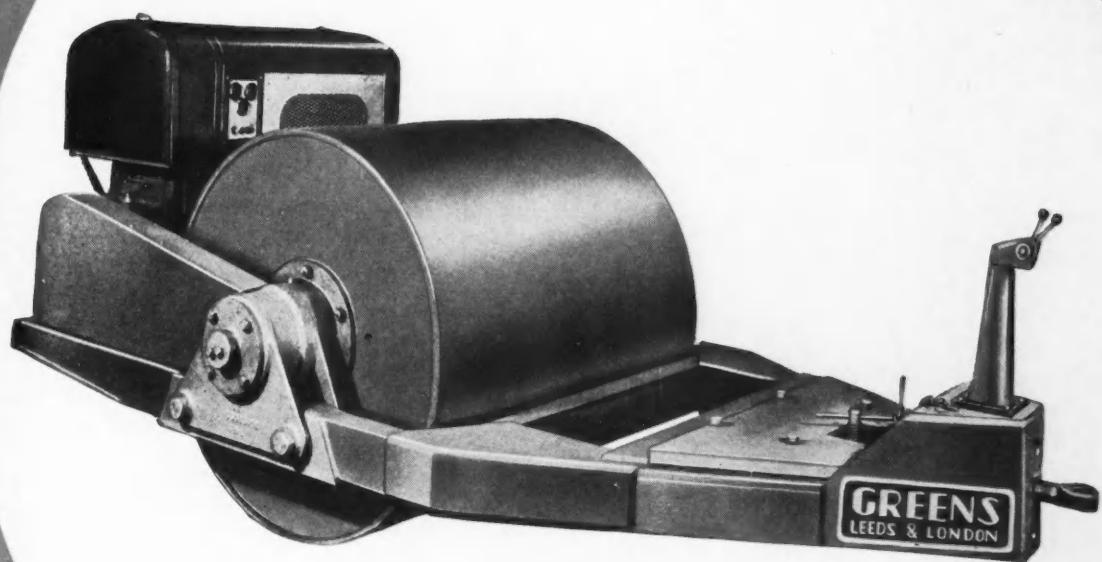


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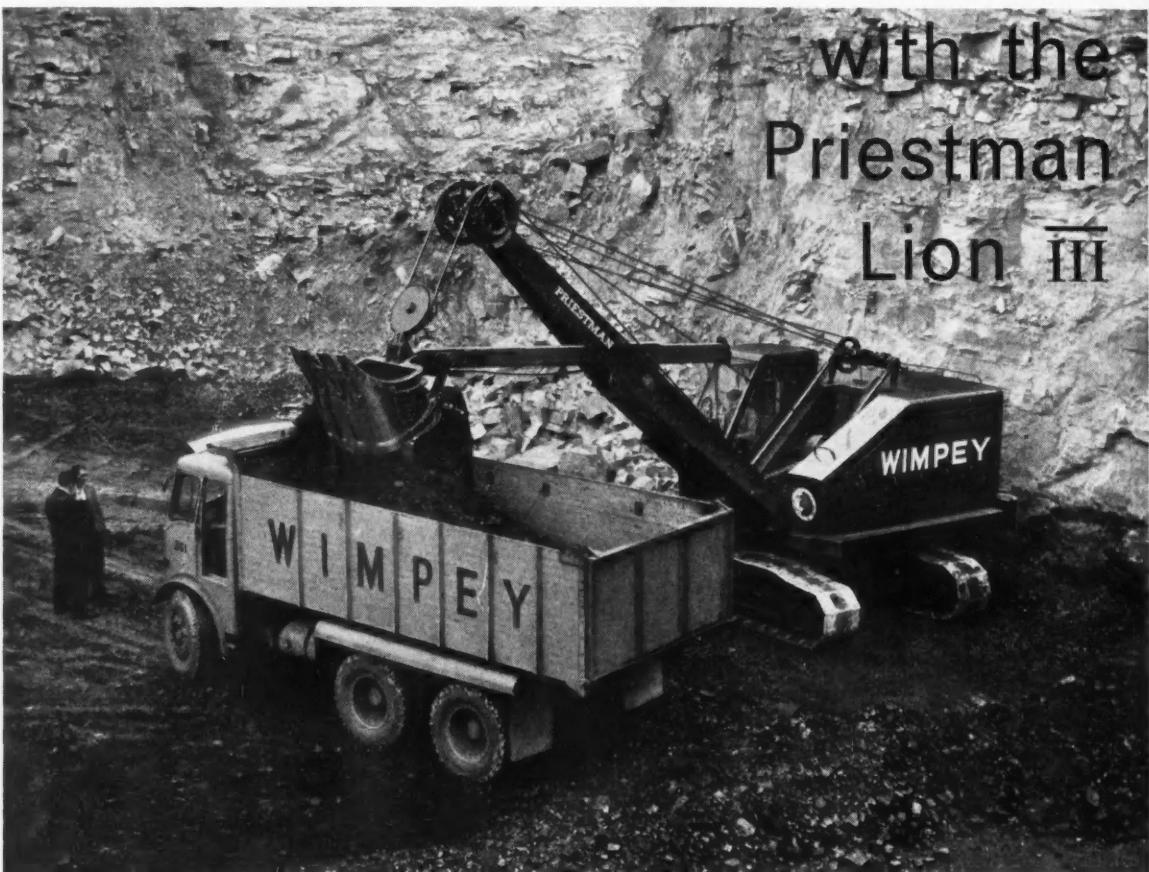
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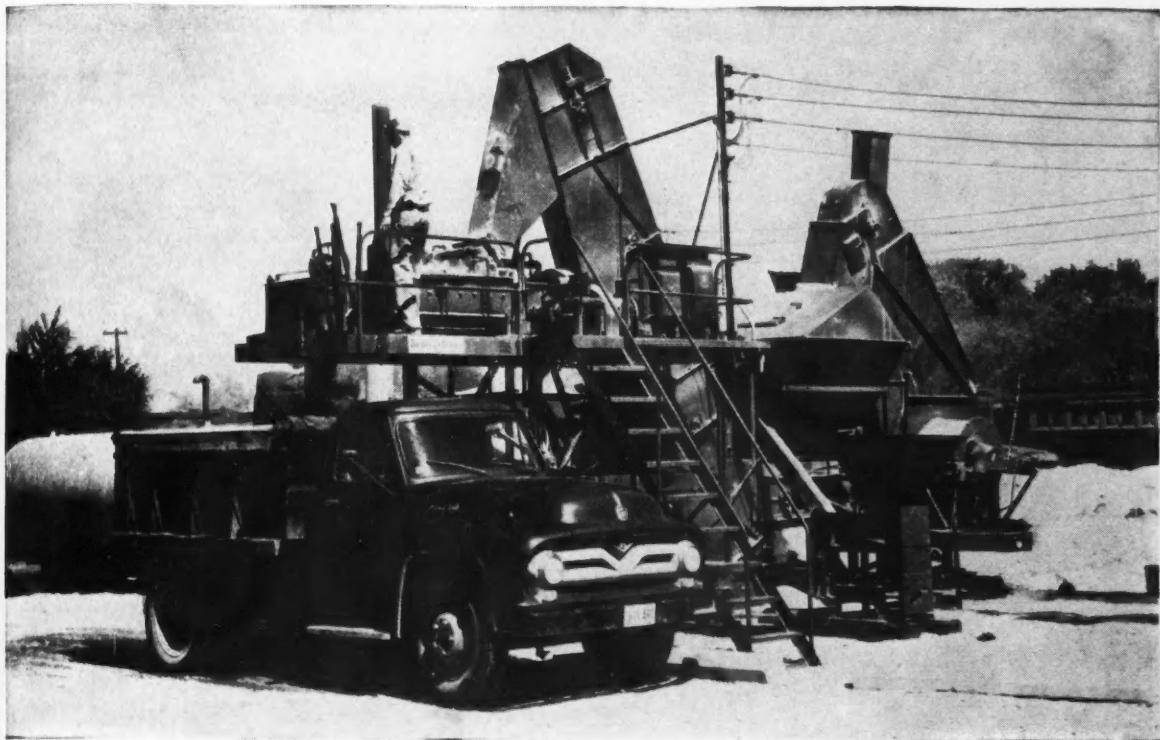
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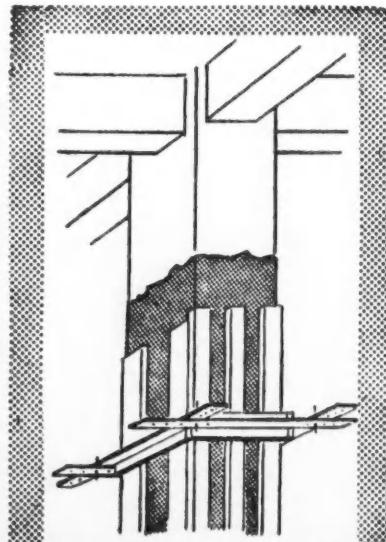


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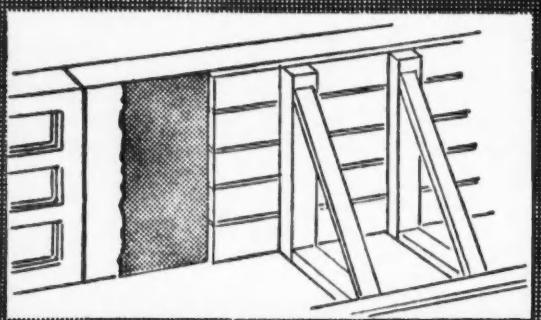
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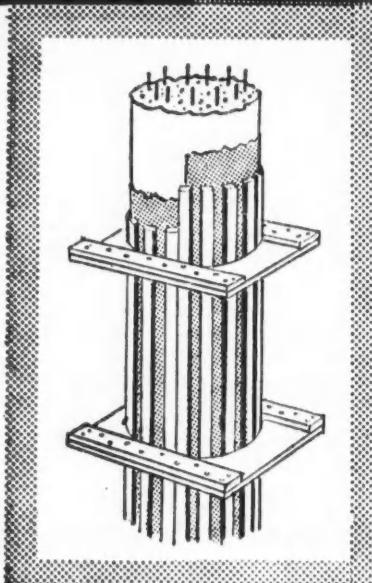
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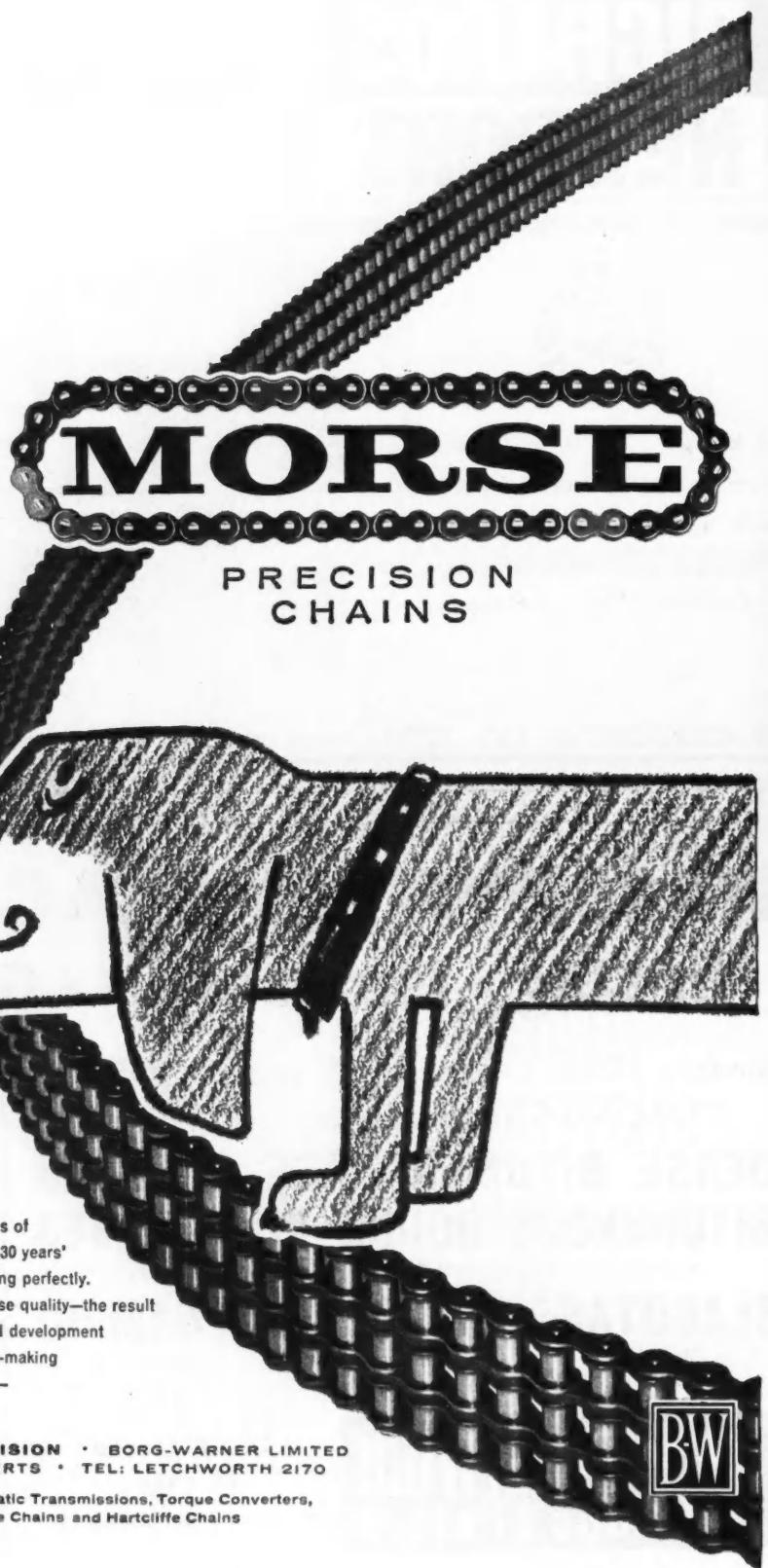
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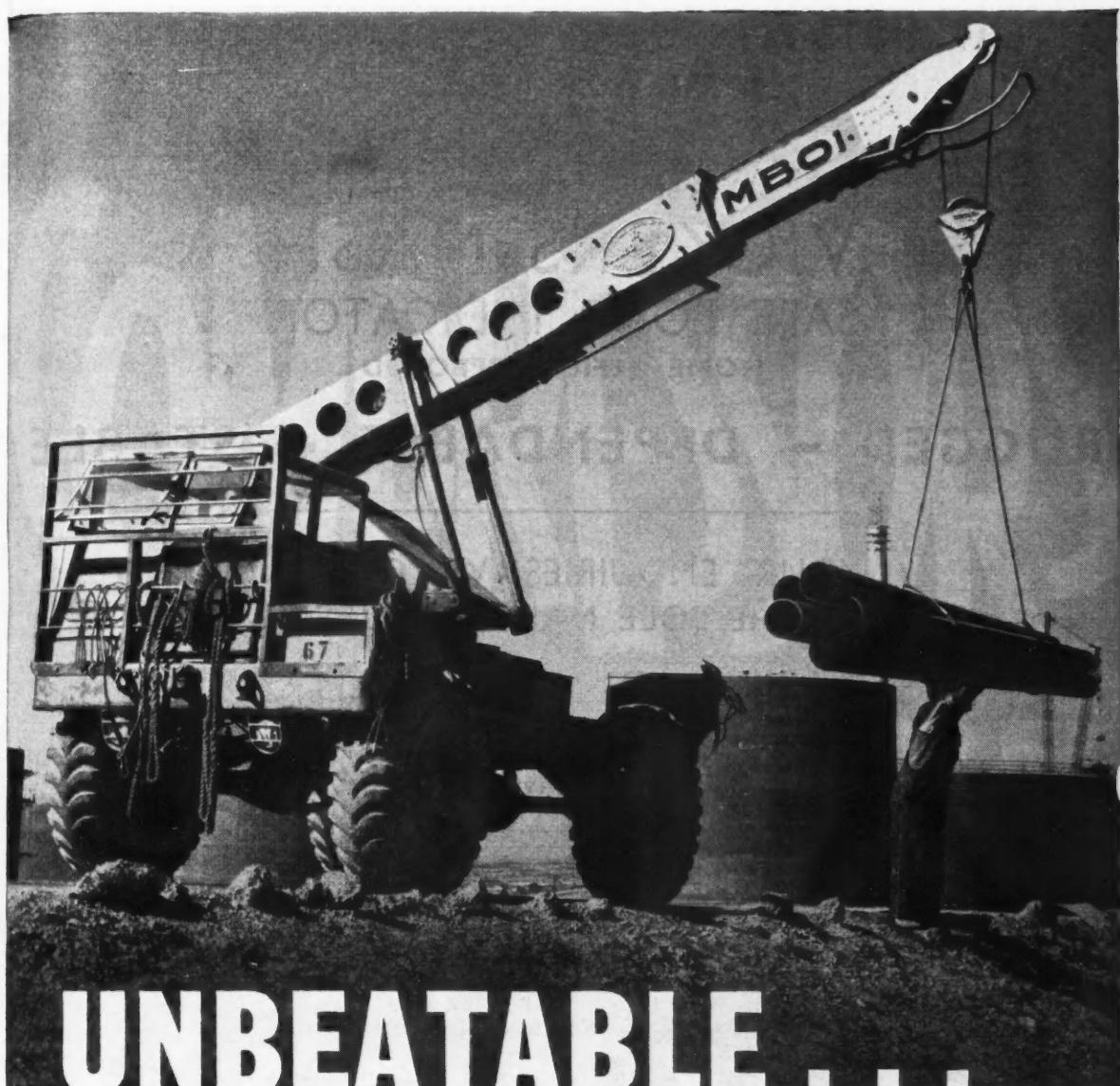
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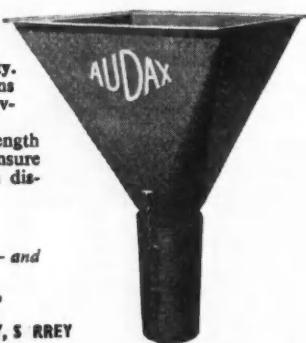
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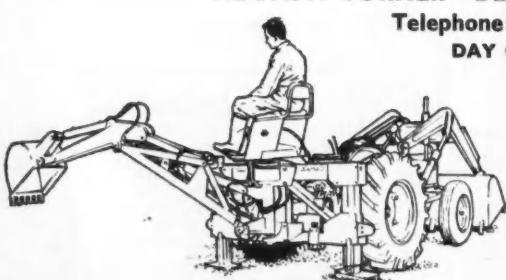
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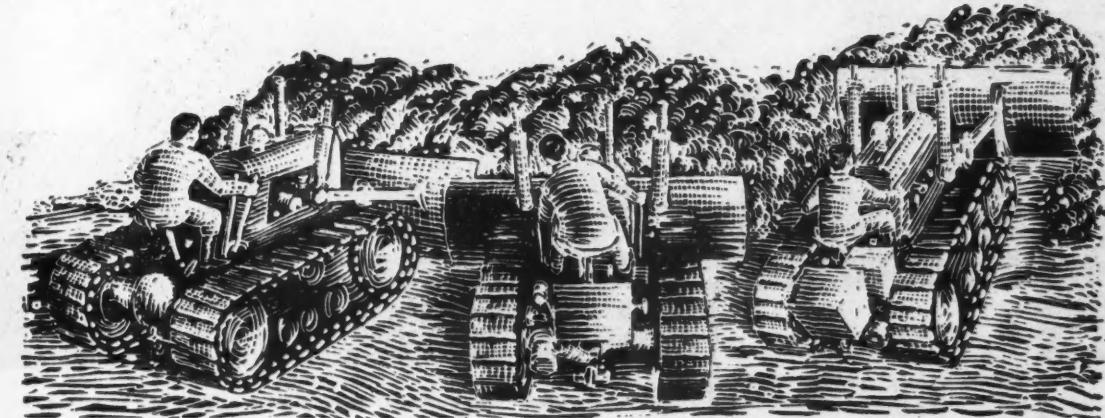
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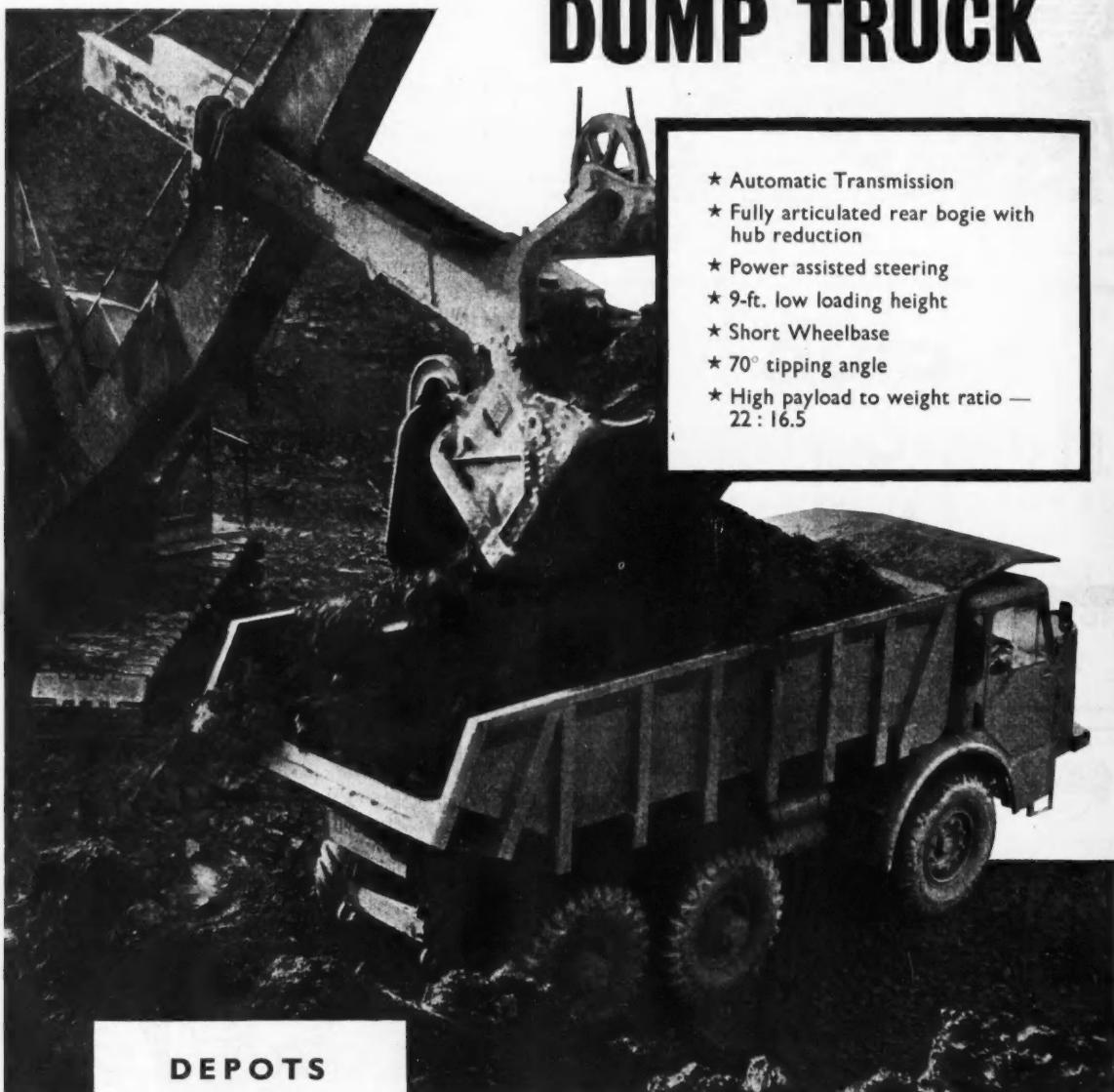
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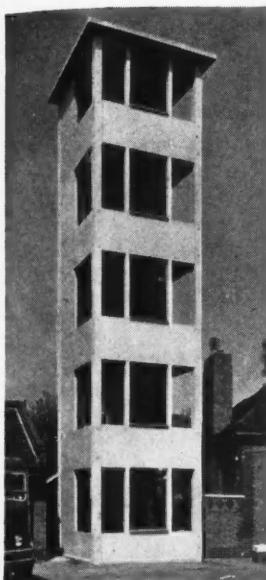
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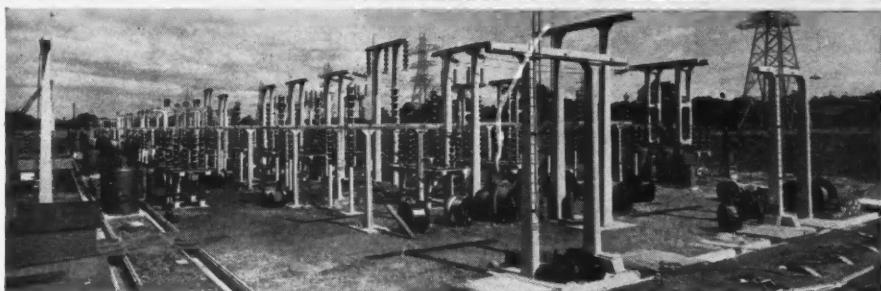
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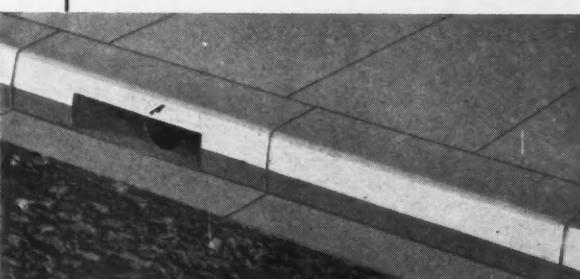
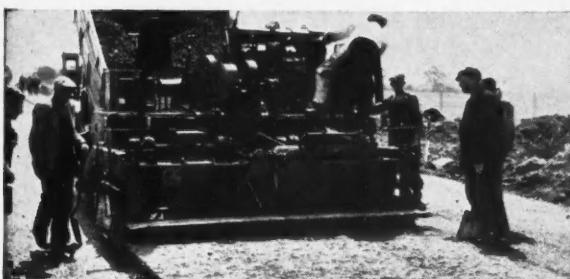
Croft Precast Concrete Drill and Hose Towers  
(Photograph by courtesy of Birmingham Corporation Fire Service and "Birmingham Post").

Croft Precast Granite Concrete Electrical Structures at the Penn 132 K.V. sub-station. Authority: Central Electricity Generating Board.



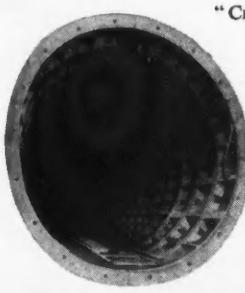
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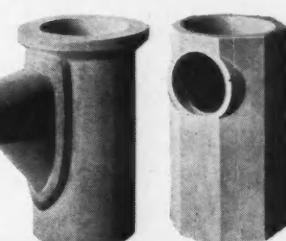


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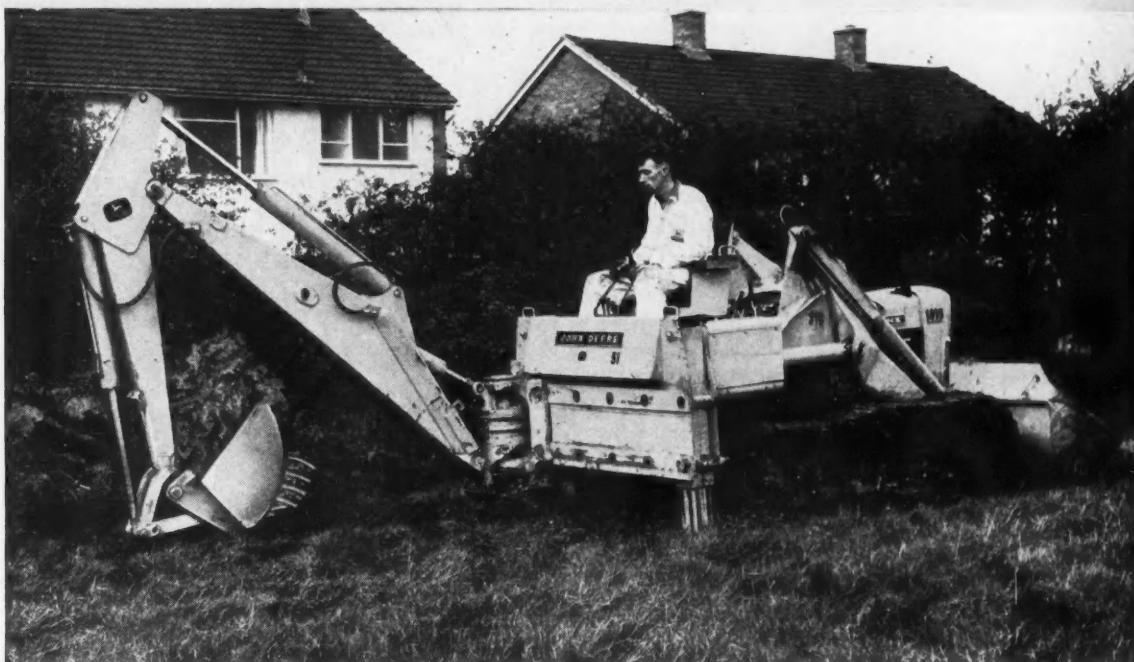
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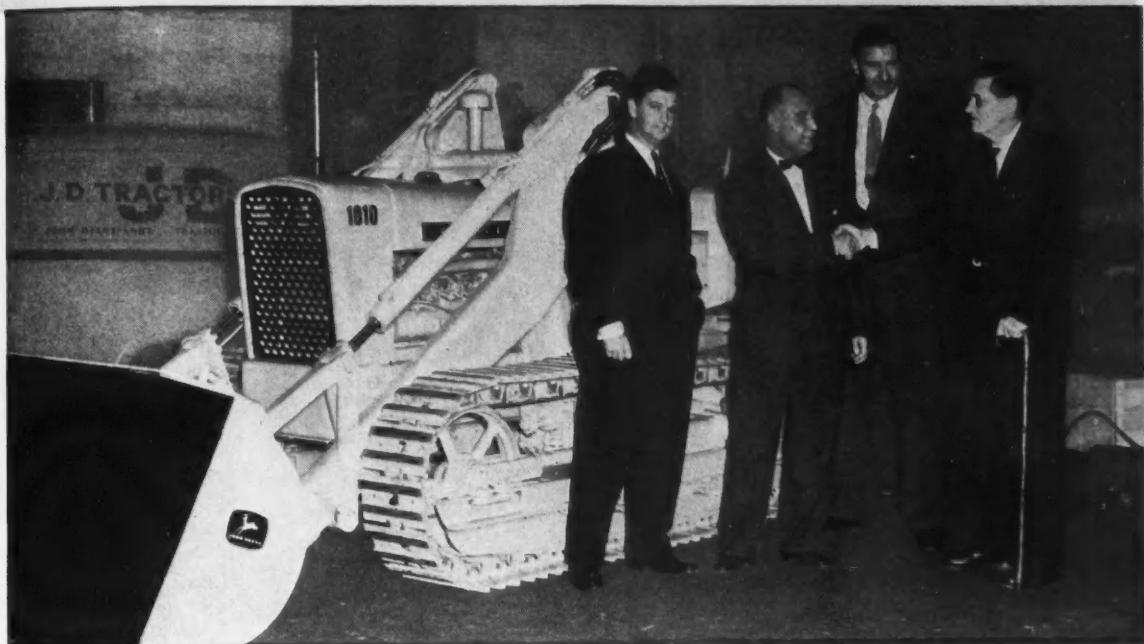
*The John Deere-Lanz No. 51 Backhoe has adjustable Crowd for square holes, power digging or lorry loading. A wide range of bucket sizes is available. This Backhoe can be supplied on the 1010 Crawler Loader or the 1010 Crawler 'dozer.*



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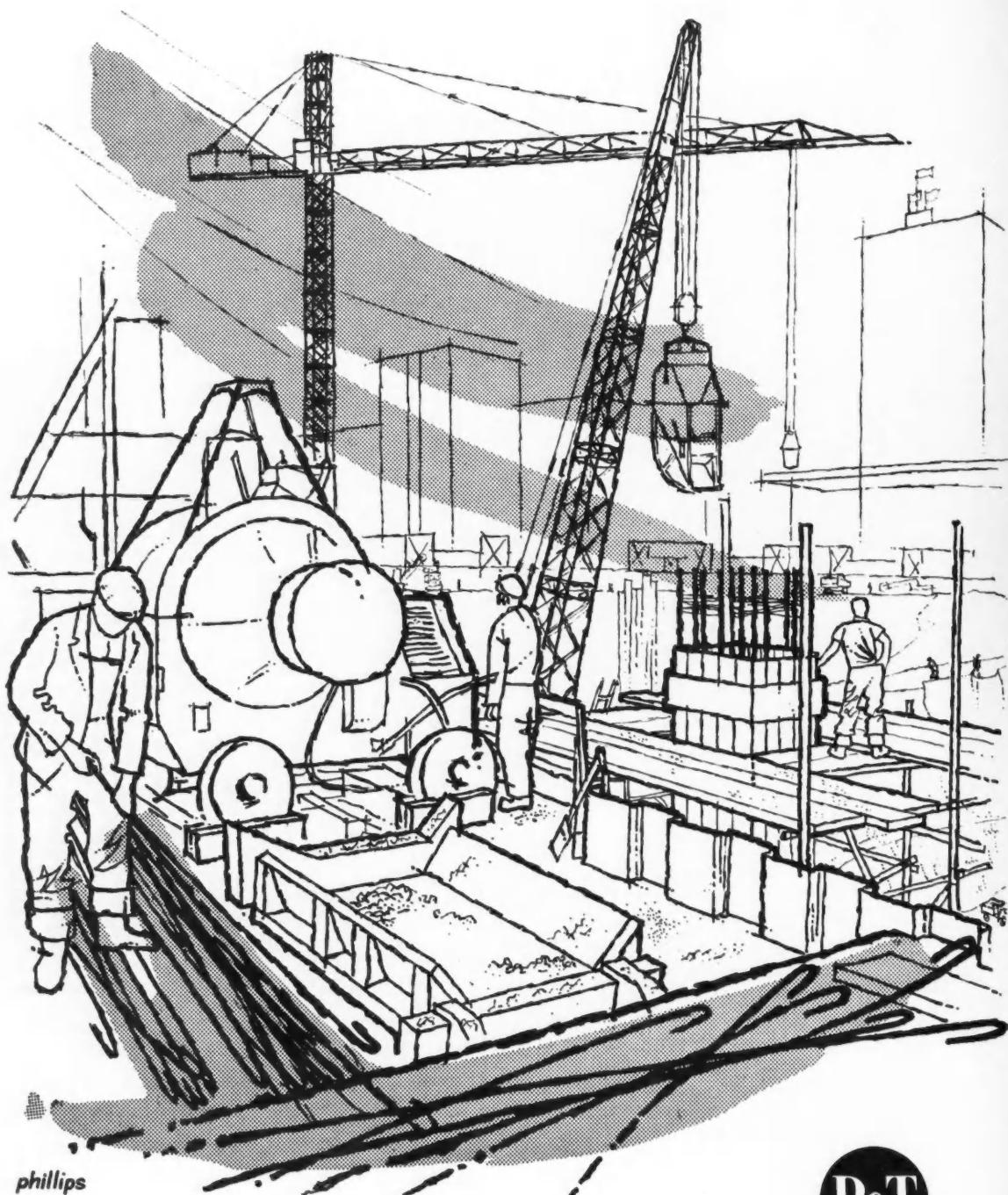


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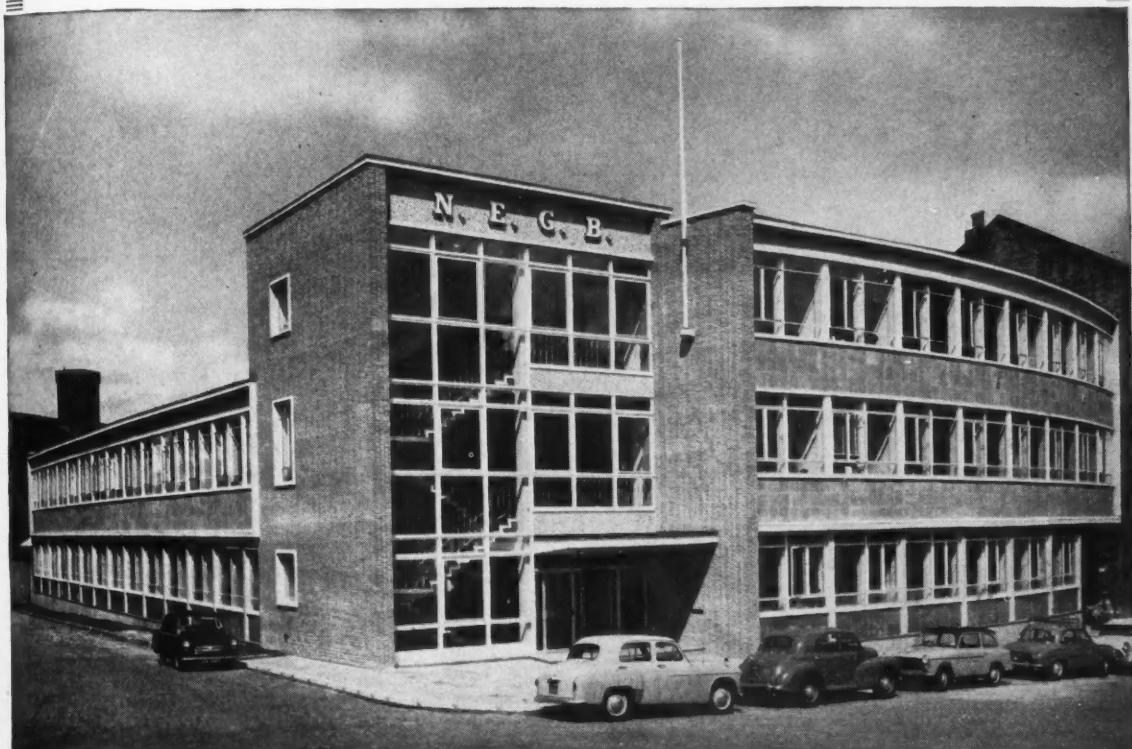


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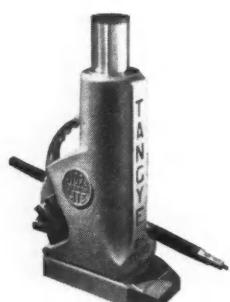
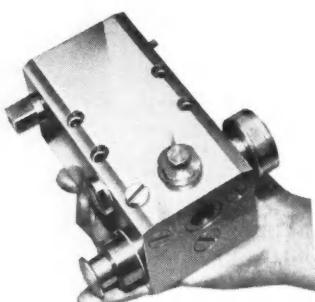
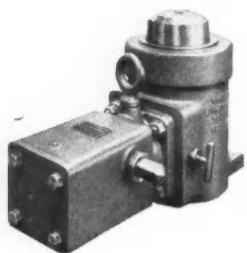
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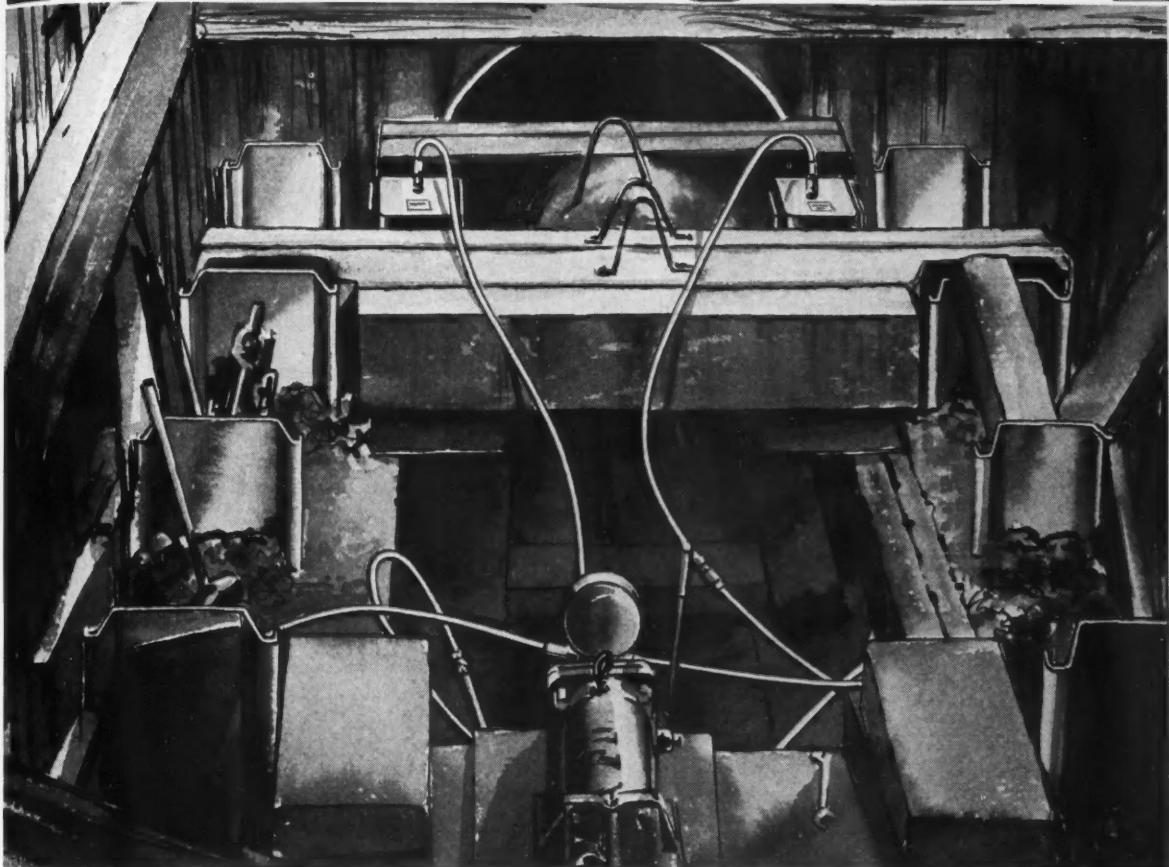
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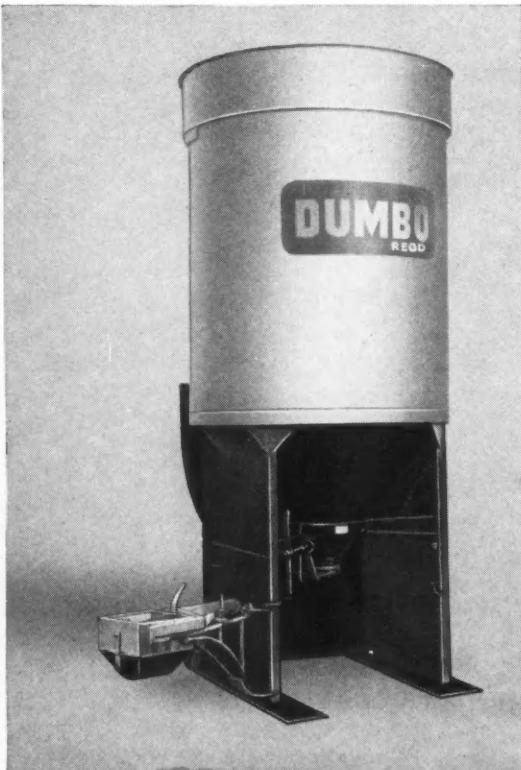
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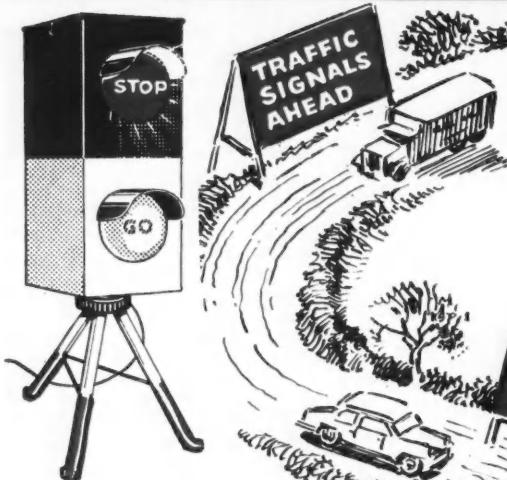
The advertisement features a large, bold title 'HARDUNS' in the center. To the left of the title is a dark vertical panel containing several small, white line drawings of different types of mobile buildings and equipment, including a long building with many windows, a smaller structure on stilts, a long bench-like structure, and a tall cabinet or shelving unit. To the right of the title is a large, light-colored mobile site office building with a gabled roof and multiple windows. A black tow bar and hitch are shown at the bottom, indicating it can be transported by road.

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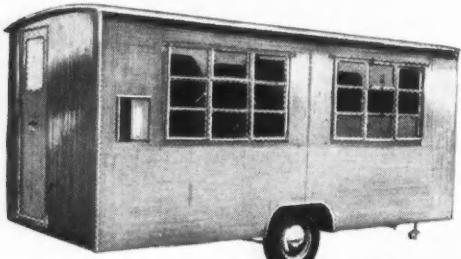
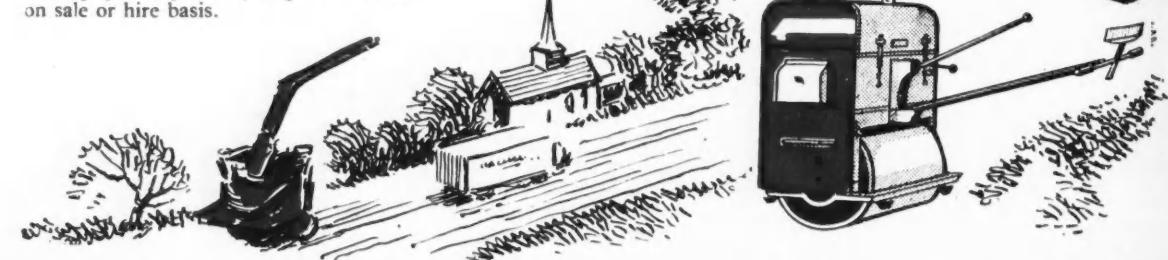
**STOP** and **GO** the right way along the Highway



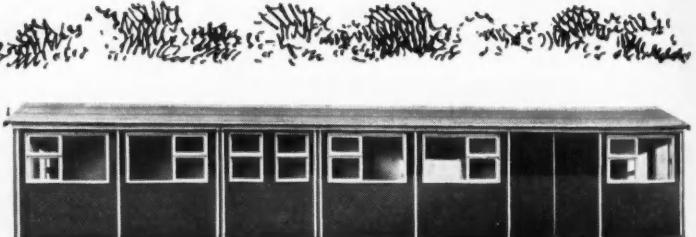
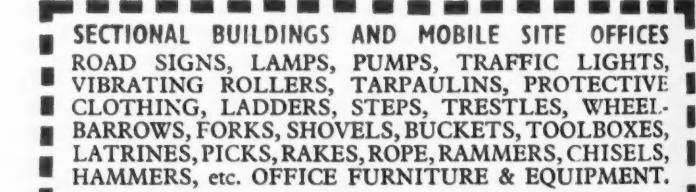
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**Shawnee  
Poole**

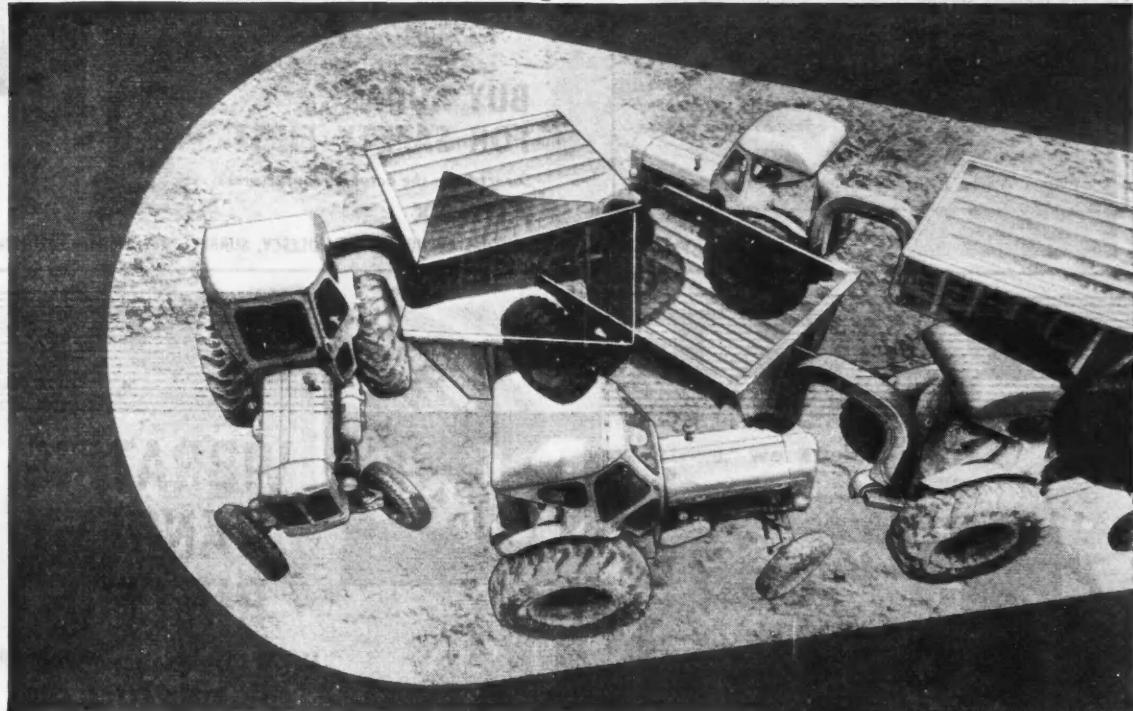
**World's shortest  
turning circle  
cuts cycle time...**

From a study of this multi-exposure illustration, you see how the Shawnee Poole makes a 'U' turn in 23' 6".

...ability to make a 'U' turn in approximately 23 ft. enables users of the Shawnee Poole System to increase production and eliminate expensive site preparation—with the System that saves up to 50% in total operating costs.

*Ask for a Job Survey on your site.*

*The Shawnee Poole System is manufactured under British and Foreign patents granted and pending.*

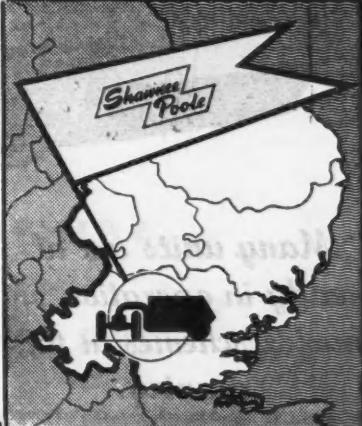


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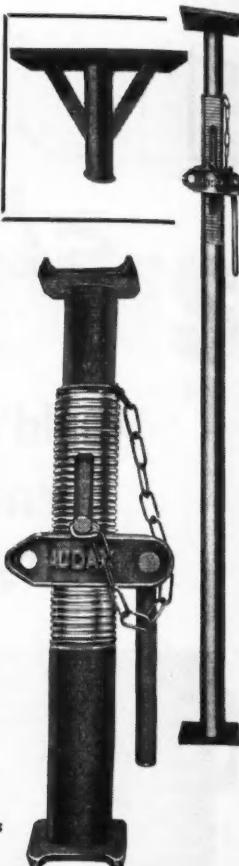


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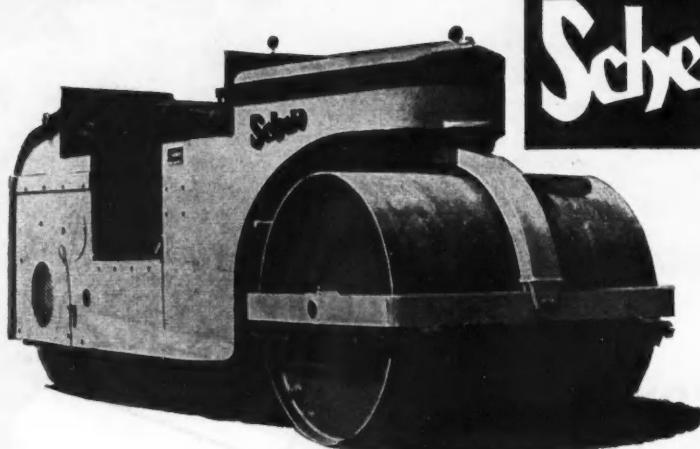
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★ vertically directed vibrations

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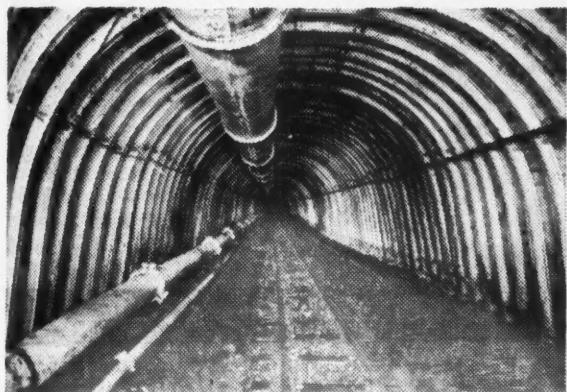
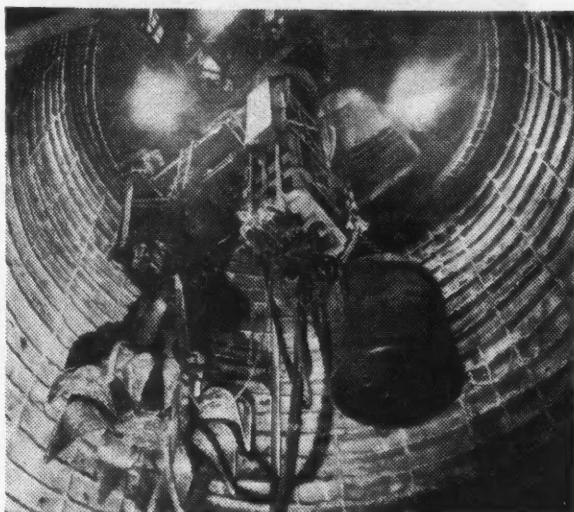
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View from the Shaft Bottom, showing the underside of the Sinking Stage, 105 cubic feet capacity bowk and lashing gear, including grab and driver's cabin, etc., in use at Kellingley Colliery, Yorkshire, where we established the British Shaft Sinking Record of 339 feet of completed 24 feet internal diameter concrete lined shaft in January, 1961.



View of the Roadway at Blaengwrach (New Drift), South Wales where, in cross measure coal strata, we established the British Tunnelling Record of 108 yards advance in one week during February, 1961.

(Photographs by courtesy  
of the National Coal Board)

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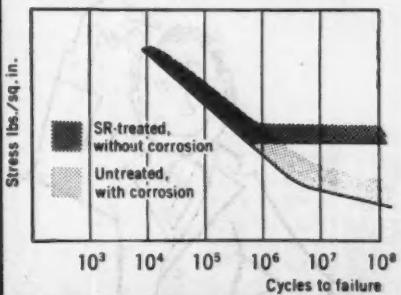
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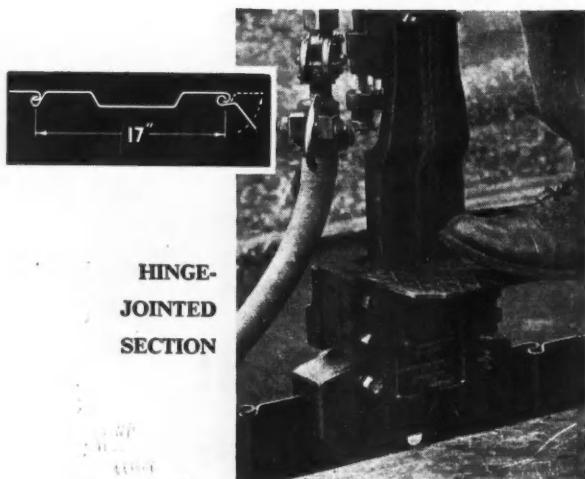
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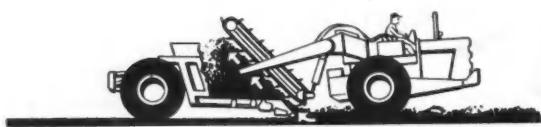
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## Spread in 5 to 10 seconds

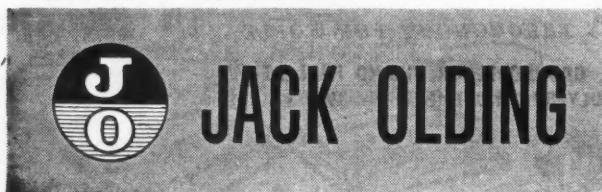


ANOTHER time and money-saving advantage of the D Tournapull-Hancock is positive load ejection. As section of scraper floor slides back, tailgate moves forward—wipes bowl clean in 5 to 10 seconds! You are assured of a fine, accurate spread, too, because the dirt has been "chopped up." And, with a strike-off blade that moves down at the start of the ejection cycle, you accurately level material merely by raising or lowering the bowl.

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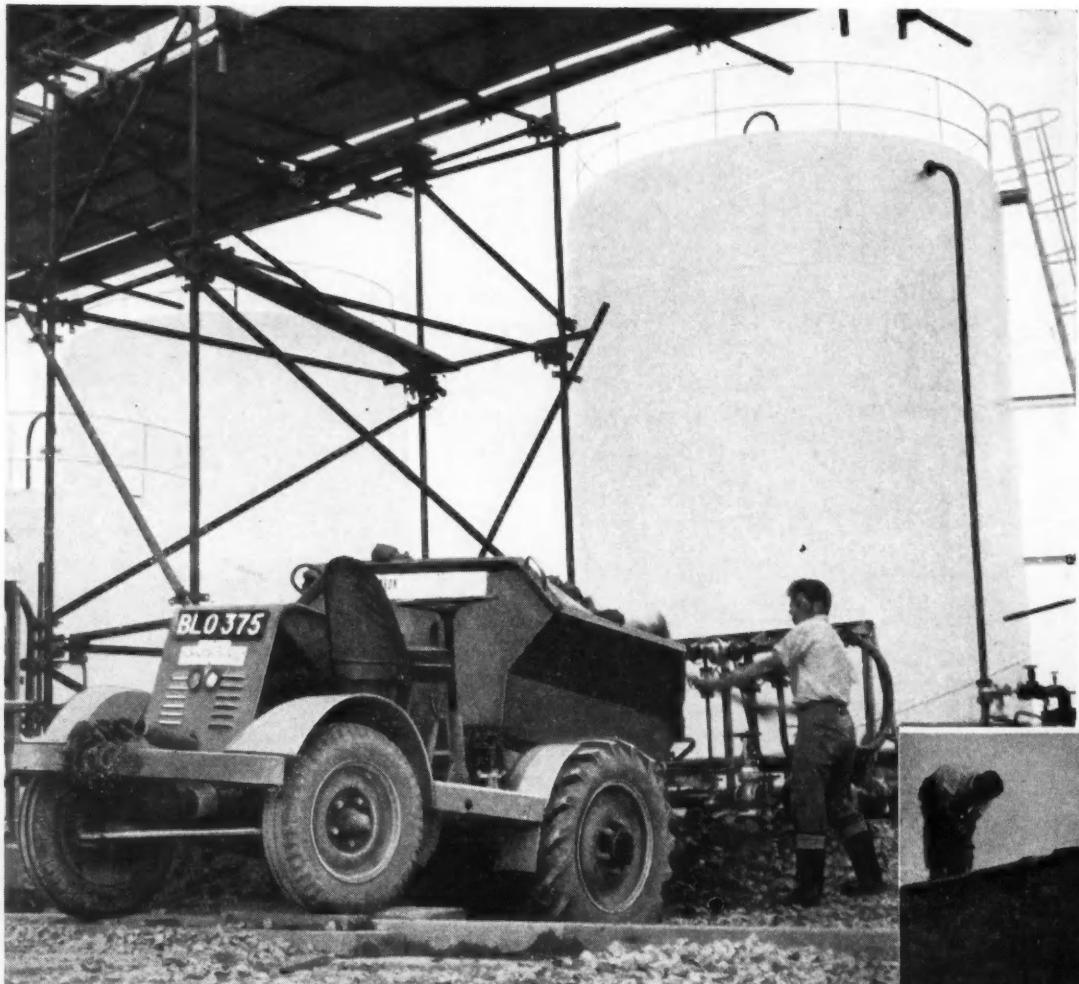
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This 1½ kVA Generating set used by contractor for power to electric drills at Severnside, is powered by PAZI air cooled diesel engine.

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Vibrating roller powered by Petter AVA2 water cooled diesel engine, in use by contractors at the new Severnside plant.



Powered by a Petter PHI air cooled diesel engine, this dumper gets on with the job. Petter-powered equipment on this site also includes pumps and other much-needed plant.

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*Agent Authority: Hertfordshire County Council.  
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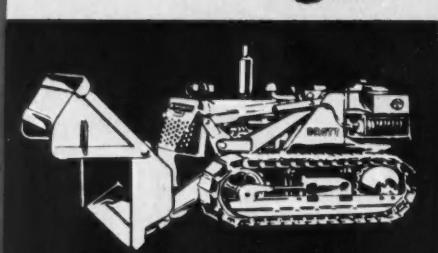
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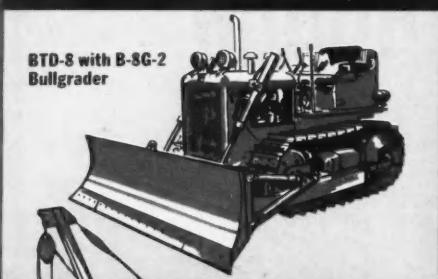
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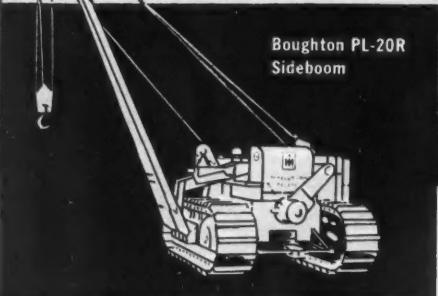
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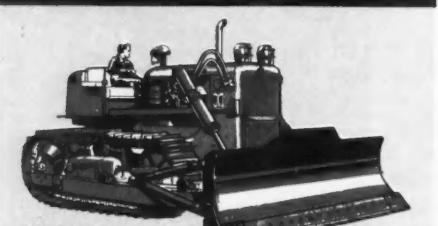
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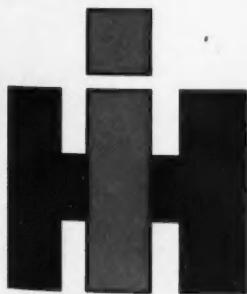
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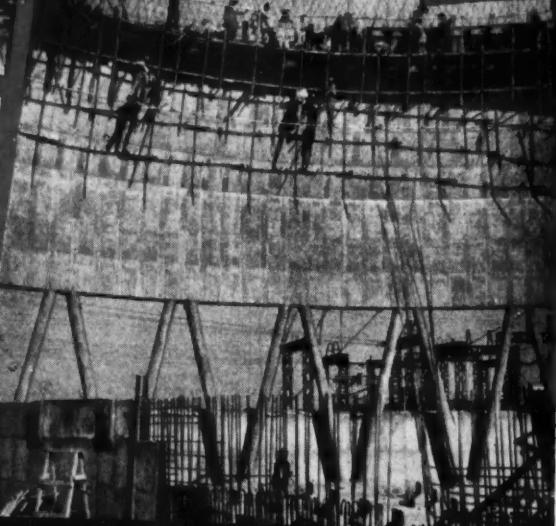
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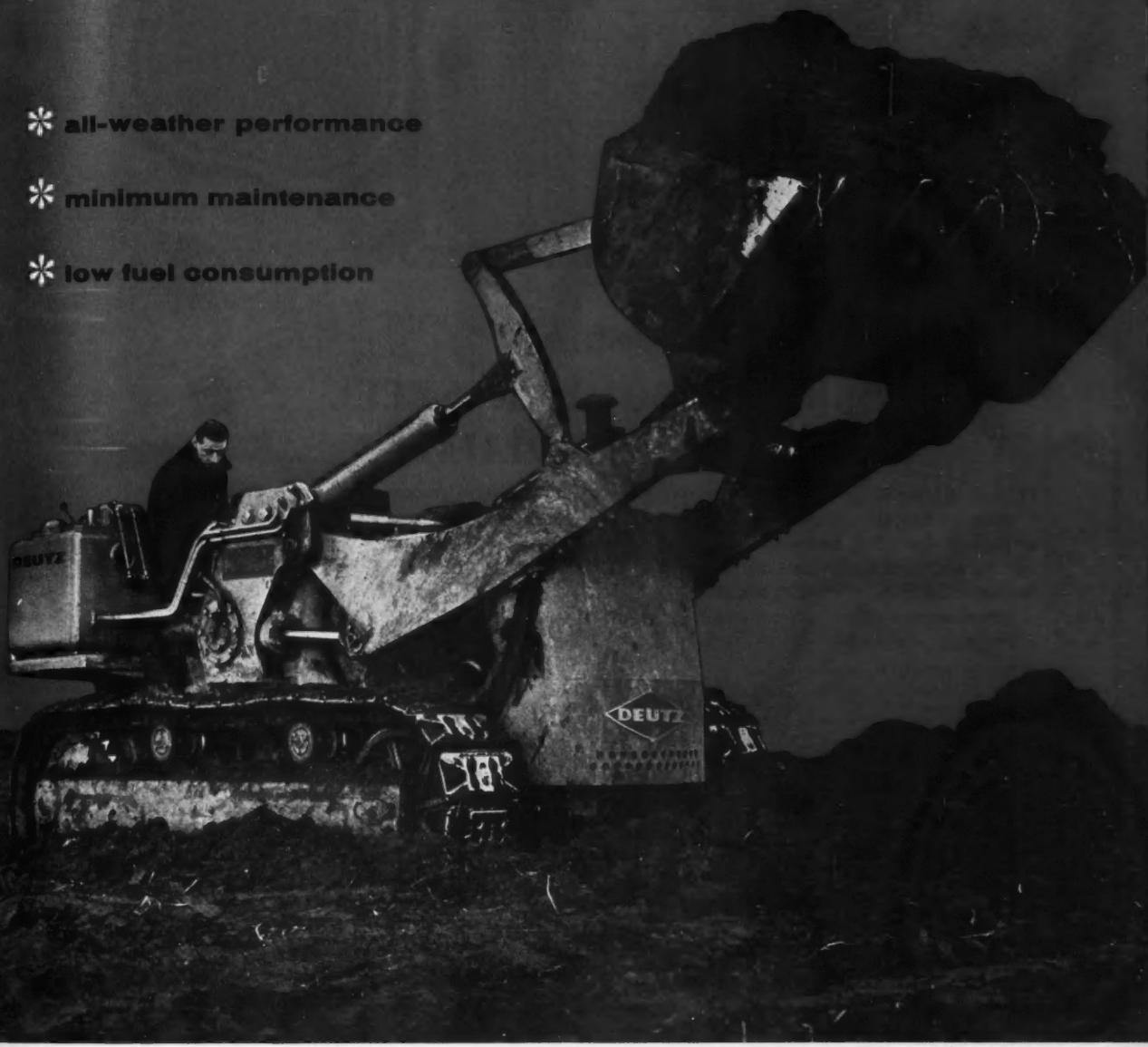
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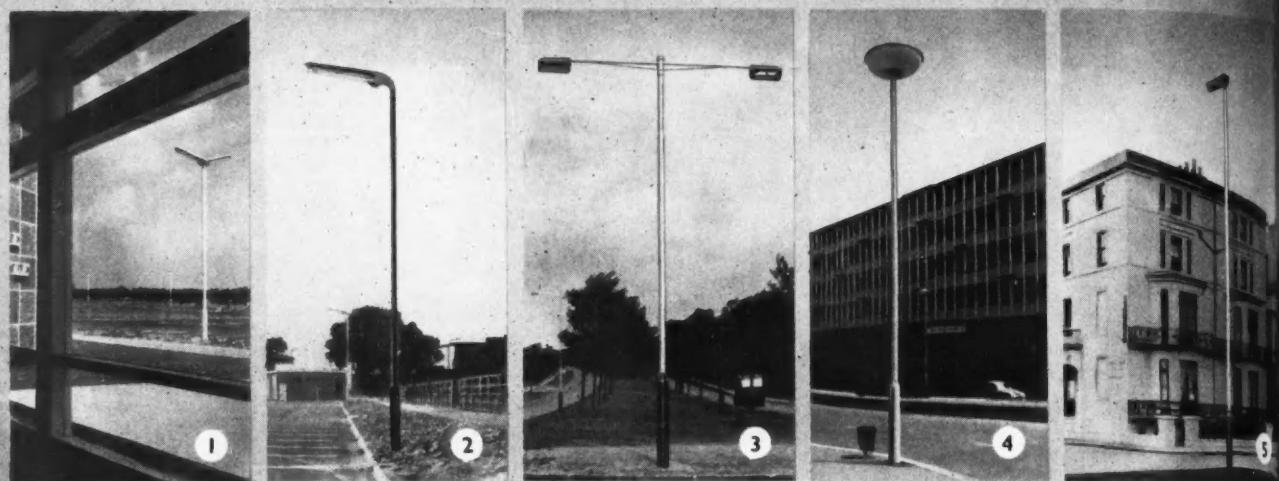
A reminder of what air-cooled means. Even at  $-68^{\circ}\text{F}$  or at  $+140^{\circ}\text{F}$  a Deutz diesel will start easily, warm up quickly, deliver steady, economical, horsepower. It means there's nothing to freeze, nothing to burst, nothing to boil. Less cold running, no corrosion, less maintenance. Over half a million air-cooled Deutz diesels are now in use throughout the world.

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Columns shown in 1 and 2 are installed adjacent to the Borough of Shrewsbury's livestock market.
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6. Type Gb. 825, 25 ft. mounting height. Installed at Merstham by the Reigate Corporation.
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*Our catalogue, with illustrations and section drawings, is available on request.*



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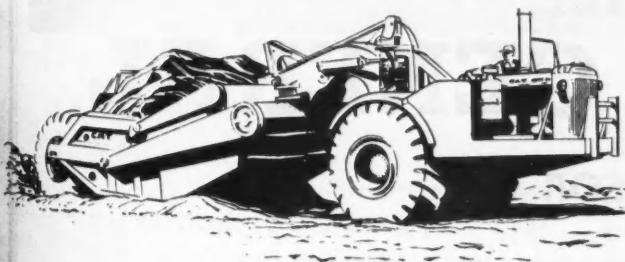
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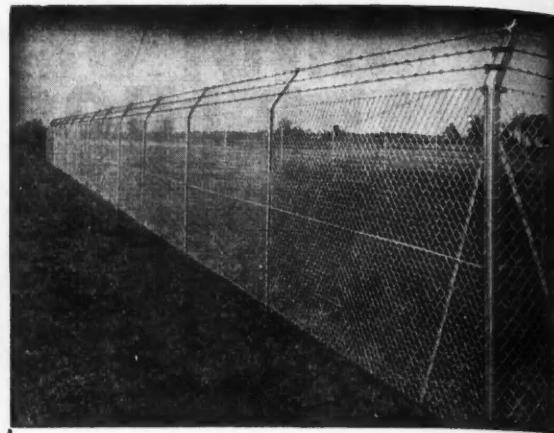
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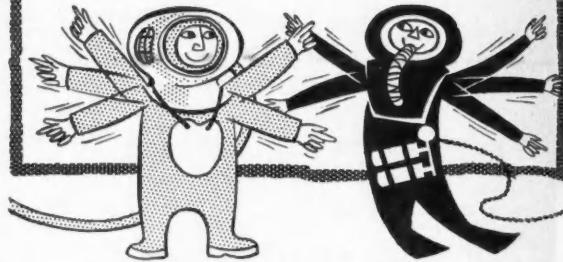
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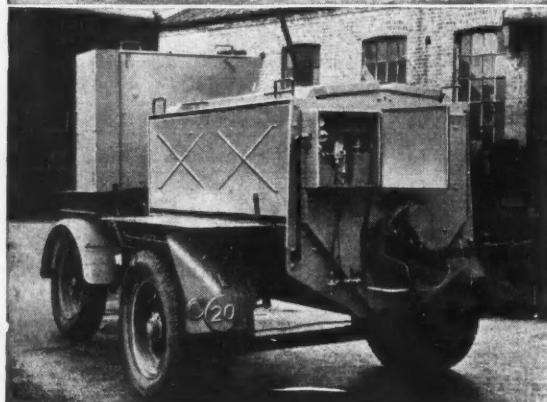
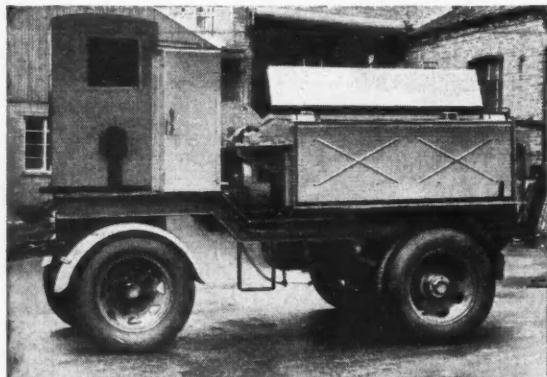
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**DANGERFIELD, F. J., AND CO., LTD.**, 261A Finchley Road, London, N.W.3. (Tel.: HAMPstead 8044/8.) For all road aggregates, kerbs, setts. (See London.)  
**FERRERSAND AGGREGATES LTD.**, Northampton Road Quarries, Tustin Lane, 354/5. (See Northants.)  
**GRAVEY PROJECTS (HUNTS), LTD.**, Little Paxton, St. Neots, Hunts. (Tel.: St. Neots 308.) Pits at Little Paxton, St. Neots, Hunts.; and Blunham, Beds.  
**HARTIGAN, G. F., LTD.**, (See Buckinghamshire.)  
**HOVERINGHAM GRAVELS, LTD.**, Hoveringham, Nottingham. (Tel.: Lowdham 3171—15 lines.) (For details, see Nottinghamshire.)  
**ST. IVES SAND AND GRAVEL CO., LTD.**, 22 The Broadway, St. Ives, Hunts. (Tel.: St. Ives 2441/2/3/4.) (See Huntingdonshire for details.)  
**WEBB, G., CAMBRIDGE, 35 Magrath Ave., Cambridge.** (Tel.: 59966, 59959, 50353 (night).)  
**WINFIELD, HENRY, LTD.**, Pit, Farm Lane, Hemel Hempstead, Herts. (Tel.: Berkhamsted 1208/9.) Pits at: Leighton Buzzard, Bedford. Building sands.

## BERKSHIRE

**BARDON HILL QUARRIES (ELLIS AND EVERARD), LTD.**, near Leicester. (Tel.: Coalville 1226/7/8; or London: VIGilant 2530.) (For details, see Leics.)  
**BULL BROS. S. and L., LTD.**, 126A High Street, Winchester. (Tel.: 2264.) (See Hampshire.)  
**COFF, HARRY A., LTD.**, Buckhurst Hill, Chipping, Ascot, Berks. (Tel.: Ascot 1026/7.) Sand, all grades of washed aggregates, hardcore, clinker, ashes and hoggin.  
**CURTIS, J. AND SONS, LTD.**, Botley Works, Oxford. (Tel.: Oxford 41081/2/3.) Sand and all grades of washed aggregates. Pits at Radley, near Abingdon. (Tel.: Radley 4412.)  
**DANGERFIELD, F. J., AND CO., LTD.**, 261A Finchley Road, London, N.W.3. (Tel.: HAMPstead 8044/8.) For all road aggregates, kerbs, setts. (See London.)  
**GRUNDON, S. (EWELME), LTD.**, Ewelme, Oxon. (Tel.: Ewelme 20 and 37.) London Office. (Tel.: Uxbridge 36511/2/3.) All grades washed aggregate, broken stone, hardcore, sand and gravel, and broken stone. Cotswold building and walling stone.  
**HALL AND CO., LTD.**, Cardiff Road, Reading. (Tel.: 50450.) Pit, Theale. (Tel.: Theale 573.)  
**HOVERINGHAM GRAVELS, LTD.**, Hoveringham, Nottingham. (Tel.: Lowdham 3171—15 lines.) (For details, see Nottinghamshire.)  
**JAMES AND CO., LTD.**, 2C Buckingham Avenue, Slough. Sand aggregates, hardcore, ashes, buldozing stone, broken stone, hardcore, sand and gravel, and broken stone. Cotswold building and walling stone.  
**LONDON BALLAST CO., LTD.**, (Tel.: Paddington 5064/5, 155A Porchester Terrace North, Paddington, W.2.)  
**MIDLAND AGGREGATES, LTD.**, Eversley, Basingstoke, Hants. (Tel.: Eversley 2250.) Washed and pit sand and all aggregates.  
**RALPH OF BADINGSTOKE, LTD.**, 37 Kempshott Lane, Basingstoke, Hants. (Tel.: 65.) Concrete aggregates, building sand, sand, gravel, hoggin, etc.

## BRECKNOKSHIRE

**NASH ROCKS STONE AND LIME CO., LTD.**, Presteigne, Radnor. (Tel.: Presteigne 352.) (See Herefordshire for details.)  
**SALOP SAND AND GRAVEL SUPPLY CO.**, Amaston, Wellington. (Tel.: 961), Salop.

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**BARDON HILL QUARRIES (ELLIS AND EVERARD), LTD.**, near Leicester. (Tel.: Coalville 1226/7/8; or London: VIGilant 2530.) (For details, see Leics.)  
**BICESTER STONE CO., LTD.**, Stratton Audley, Bicester, Oxon. (Tel.: Stratton Audley 391/2.) Manufacturers and suppliers of all grades limestone, tarmacadam, dry, pitching stone, hardcore, etc.  
**COFF, HARRY A., LTD.**, Buckhurst Hill, Chipping, Ascot, Berks. (Tel.: Ascot 1026/7.) (See Berkshire.)  
**DANGERFIELD, F. J., AND CO., LTD.**, 261A Finchley Road, London, N.W.3. (Tel.: HAMPstead 8044/8.) For all road aggregates, kerbs, setts. (See London.)  
**DRINKWATER, W. W. (WILLESLEY), LTD.**, Rush Green, Denham, Bucks. (Tel.: Denham 2241/2/3.)  
**GRUNDON, S. (EWELME), LTD.**, Ewelme, Oxon. (Tel.: Ewelme 20 and 37.) London Office. (Tel.: Uxbridge 36511/2/3.) All grades washed aggregates, Path hoggin, broken stone, building sand, Haines. (Tel.: Witney 42.) All grades washed aggregates, building, pitching and broken stone. Cotswold building, and walling stone.  
**HALL AND CO., LTD.**, Brentford, Middlesex. (Tel.: Isleworth 4455), and Coronation Road, High Wycombe. (Tel.: 5121), and at Gerrards Cross, Pits at Wraysbury (Middx.), and Iver (Bucks.).  
**HARTIGAN, G. F., LTD.**, High Street, Newport Pagnell. (Tel.: 126.) Graded and single-sized aggregates to B.S.S. Pits at Newport Pagnell and Broughton, adjoining M.1 flyover.  
**HOVERINGHAM GRAVELS, LTD.**, Hoveringham, Nottingham. (Tel.: Lowdham 3171—15 lines.) (For details, see Nottinghamshire.)  
**JAMES AND CO., LTD.**, 2C Buckingham Avenue, Slough. Sand aggregates, hardcore, ashes, buldozing and bulk excavation. (Tel.: Slough 20361/2/3.)  
**LONDON BALLAST CO., LTD.**, (Tel.: Paddington 5064/5, 155A Porchester Terrace North, Paddington, W.2.)  
**MARLOW SAND AND GRAVEL CO., LTD.**, Westhorpe, Pit, Little Marlow, Bucks. (Tel.: Marlow 379.)  
**STUART MACEY, LTD.**, Gordon Road, High Wycombe. (Tel.: High Wycombe 2591/2.)

## CAMBRIDGESHIRE

**BARDON HILL QUARRIES (ELLIS AND EVERARD), LTD.**, near Leicester. (Tel.: Coalville 1226/7/8; or London: VIGilant 2530.) (For details, see Leics.)  
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**DICKERSON, M. (CONTRACTORS), LTD.**, Gloucester Cambridge. (Tel.: Cambridge 56973/4.) All grades washed sand and gravel, reject stone, hoggin, clinker, crushed granite, crushed and graded concrete, hardcore, brick rubble, ready-mixed concrete (all grades).  
**HOVERINGHAM GRAVELS, LTD.**, Hoveringham, Nottingham. (Tel.: Lowdham 3171—15 lines.) (For details, see Nottinghamshire.)  
**MACLAUREN BROS. (KENNTON), LTD.**, gravel, tarred and bituminous, gravel asphalt, washed sand and gravel, all to B.S. Specifications. Delivered to any site. Station Rd., Kentish, Camb. (Tel.: Kentford 333/4.)  
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**NASH ROCKS STONE AND LIME CO., LTD.**, Presteigne, Radnor. (Tel.: Presteigne 352.) (See Herefordshire for details.)  
**SALOP SAND AND GRAVEL SUPPLY CO.**, Amaston, Wellington. (Tel.: 961), Salop.

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**HULLAND GRAVEL CO., LTD.**, Cheadle, Stoke-on-Trent. (Tel.: Cheadle 2323/4, 2119 and 2195.) Manchester Office: 644 Wilbraham Road, Chorlton, Manchester 21. (Tel.: Chorlton 2274/5.)

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**DANGERFIELD, F. J., AND CO., LTD.**, 261A Finchley Road, London, N.W.3. (Tel.: HAMPstead 8044/8.) For all road aggregates, kerbs, setts. (See London.)

**DORSET LIMESTONES, LTD.**, Bumpers Lane, Easton, Portland, Dorset. (Tel.: Portland 2207/8.) Tarred and bituminous macadam, foundation materials, limestone for all purposes and to all gradings. Portland stone aggregates and Portland limestone aggregated for reconstructed stone. By road and sea.

**HAINES AND CO., LTD.**, 8 Commercial Road, Parkstone. (Tel.: 5379.)

**MOREYS (VERWOOD), LTD.**, Verwood, Wimborne, Dorset. (Tel.: Verwood 234.) Concrete aggregates, building sand, hoggin, path gravel.

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**ALRESFORD SAND AND BALLAST CO., LTD.**, Alresford Creek, near Colchester, Essex. (Tel.: Wivenhoe 341/494.) Pits at Alresford Creek, Brightlingsea, Boxford, Bures and Holland. All grades of washed shingle, concreting sand and building sand. Road and water transport.

**BAKER, F. AND E., LTD.**, 73 High Road, Rayleigh, Essex. (Tel.: Rayleigh 1031/2.) Pits at Great Totham, Heybridge and West Tilbury. All grades of washed material supplied and delivered; also hardcore ash and bricks.

**BARDON HILL QUARRIES (ELLIS AND EVERARD), LTD.**, near Leicester. (Tel.: Coalville 1226/7/8; or London: VIGilant 2530.) (For details, see Leics.)

**BUCKBRICKS COMPANY, LTD.**, Sand and ballast pits, Martells, Ardleigh, Colchester. (Tel.: Ardleigh 310.) All grades of washed aggregates, sand, building sand, asphalt, grit. Sterilised dry sand accurately graded to buyer's requirements.

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**HOVERINGHAM GRAVELS, LTD.**, Hoveringham, Nottingham. (Tel.: Lowdham 3171—15 lines.) (For details, see Nottinghamshire.)

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**PETERS AND BARNHAM, LTD.**, 309 South Street, Romford. (Tel.: Romford 44141—7 lines.) Washed and crushed gravel, all sizes. Sand pits at Asheldham, Chignall St. James, Dagenham, Great Waltham, North Ockendon, Roxwell, West Thurrock, Romford and Thorpe-le-Soken.

**PINCH, L. A. AND A., LTD.**, Upper Rainham Road, Elm Park, Hornchurch, Essex. (Tel.: Hornchurch 48912/3/4.) Haulage, all aggregates and excavation.

**READ, P. T., LTD.**, Fairlop Airfield, Forest Road, Ilford. (Tel.: Hainault 6111/2/3.) High-grade sands, ballast and shingles supplied and delivered; also ready-mixed concrete.

**ST. ALBANS SAND AND GRAVEL CO., LTD.**, London Colney, St. Albans, Herts. (Tel.: Bowmansgreen 2271.) Pits at Madgeaud Road, Nazeing; Station Road, Waltham Abbey.

**ST. IVES SAND AND GRAVEL CO., LTD.**, 22 The Broadway, St. Ives, Hunts. (Tel.: St. Ives 2441/2/3/4 and Halstead 2323.) Pits at St. Ives and Gosfield, near Halstead.

**STANWAY CONTRACTS, LTD.**, Upper Edwards Hall, Stanway, Cheltenham. (Tel.: Eastwood 5516.) Sand and gravel pits at Rochford and Woodham Walter. Graded aggregates supplied and delivered.

**WIVENHOE SAND, STONE AND GRAVEL CO., LTD.**, Wivenhoe, near Colchester, Essex. (Tel.: Wivenhoe 231.) High quality washed aggregates of all grades.

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**BENGY AND SONS, LTD.**, Longmoor, Kingsland, Leominster, Herefordshire. (Tel.: Kingsland 301/4.) See details under Herefordshire.

**COKE, T. F. (CHELTENHAM), LTD.**, 267 Gloucester Road, Cheltenham. (Tel.: Cheltenham 4717/4874.) Sand, graded gravel aggregates, hardcore, limestone, chippings, tar paving, bituminous macadam, and cold asphalt to B.S.S. for hand or machine laying.

**CROMHALL QUARRIES, LTD.**, Cromhall, Wotton-under-Edge, Glos. (Tel.: Falfield 3461/7.) Concrete aggregate, sand and gravel, large quantities. Tarmacadam, tarpaving, bituminous macadam, and cold asphalt to B.S.S. for hand or machine laying.

**GRIFFITHS, A. AND SONS.**, Churchdown, Gloucester. (Tel.: Churchdown 3135 and 2216.) Pit, quarry and dredger owners. All grades and types aggregate materials.

# CONTRACTORS' GUIDE TO AGGREGATES

GLOUCESTERSHIRE

**HALL AND CO., LTD.**, Longmoor House, Ashton Vale Road, Bristol, 3. (Tel.: 63001.) Gravel aggregates, concreting, plastering and building sand.  
**HOVERINGHAM GRAVELS LTD.**, Hoveringham, (Bridgwater), 3171—(15 lines).  
(For details see *Nottinghamshire*).  
**SHAKEMANTLE QUARRY CO., LTD.**, Cinderford, Glos. (Tel.: Cinderford 1—) "Doura" facing, Engineering and Common Bricks in terra-cotta, red and golden bristles. Concrete aggregates, roadstones, and Dolomitic media.  
**TAYMAC LTD.**, Wootton Bassett, near Swindon, Wilts. (Tel.: Wootton Bassett 391—5 lines.) Cotswools stone, hardcore, washed and graded aggregate, building sand.  
**WHITECLIFF QUARRIES AND BRICKWORKS LTD.**, Coleford, Glos. (Tel.: Coleford 3158.) Tarred and bituminous limestone macadam; asphalt; concrete aggregates; facing and engineering bricks; common bricks for all purposes. Delivery road or rail.

HAMPSHIRE

**BOROUGH HILL QUARRIES (ELLIS AND EVERARD), LTD.**, near Leicester. Tel.: Coalville 12284. (81.) London, VIG (London 2530). (For details see Leics.)

**BULL BROS. S. AND L. LTD.**, 126A High Street, Winchester. (Tel.: 2264.) Concreting and aggregates (reconstituted, pit-mixed, weighbatched to meet any specification); also ballast, hoggin, path gravel and sand from own pits at Fawley, Lockerley, Ringwood, Romsey, Sway and Totton.

**DANGERFIELD, F. J., AND CO., LTD.**, 261A Finchley Road, London, N.W.3. (Tel.: Hatfield 8044/8.) For all road aggregates, kerbs, stones, etc.

**HALL AND CO., LTD.**, Baltic Wharf, Marine Parade, Southampton. (Tel.: Southampton 21234), and at Portsmouth. Pits at Ringwood, Hightbridge and Fawley. Gravel aggregate, concreting, plastering and building sand.

**HAWTHORN, D. & SONS**, Queen Street, Emsworth. For washed sand and graded aggregates, path and road gravels, hogging, clinker, ashes. (Tel.: Emsworth 2271.)

**HOVERINGHAM GRAVELS, LTD.**, Hoveringham, Nottingham. (Tel.: Lowdham 3171—15 lines.) (For details, see Nottinghamshire.)

**MIDLAND AGGREGATES, LTD.**, Eversley, near Basinscombe, Hants. (Tel.: Eversley 2250.) Washed sand, pit gravel, and aggregate.

**MOREYS (VERWOOD), LTD.**, Verwood, Wimborne, Dorset. (Tel.: Verwood 234.) Concrete aggregates, building sand, hoggin, path gravel.

**NEW MILTON SAND AND BALLAST CO.**, Lympington Road, New Milton, Hants. (Tel.: 37 and 566.) Guaranteed uncrushed, washed, screened and graded concrete aggregates. All sizes. Washed sharp and fine sands.

**PRIVETT, W. G. AND SONS, LTD.**, Drayton Lane, Portsmouth. (Tel.: Cosham 70059.) Concrete aggregates, building sand, hoggin, ashes, washed and graded filter media, etc.

**RALPH OF BASINGSTOKE, LTD.**, 37 Kemphcott Lane, Basingstoke, Hants. (Tel. 85.) Concrete aggregates, building sand, path gravel, hoggin, etc.

**TWICKENHAM GRAVEL CO., LTD.**, Ship Lane, Farnborough (Tel. 1126); Sandhurst Road, Yateley

HEREFORDSHIRE

**BENGRY AND SONS, LTD.**, Longmoor, Kingsland, Loughborough, Herefordshire. (Tel.: Kingsland 3014.) Suppliers of all grades of crushed concrete aggregates, road metal, facing, pitching stone, hardcore and coated macadam.

**HOVERINGHAM GRAVELS, LTD.**, Hoveringham Nottingham. (Tel.: Lowdham 3171-15 lines.) (For details see Nottinghamshire.)

**NASH ROCKS STONE AND LIME CO., LTD.**, Presteigne, Radnor. (Tel.: Presteigne 352.) All grades of tarred and bituminous macadam, road-stone, chippings and concrete aggregates, etc.

**OLD RADFORD TRADING CO., LTD.**, Kingston. (Tel.: 1211.) Granite and limestone aggregates, coated macadam, concrete products.

**SALOP SAND AND GRAVEL SUPPLY CO.,** Admaston, Wellington (Salop) 6111. Salop.

**SHAKEMANTLE QUARRY CO., LTD.**, Cinderford, Glos. (Tel.: Cinderford 3197.) "Doura" Facing, Engineering and Common Bricks in terra-cotta, red and golden brown. Concrete aggregates, road-stones and Dolomitic media.

**WHITECLIFF QUARRIES AND BRICKWORKS, LTD.**,

HERTFORDSHIRE

**BARDON HILL QUARRIES (ELLIS AND EVERARD), LTD.**, near Leicester. (Tel.: Coalville 1226/7/8; or London: VIGILANT 2530.) (For details, see Leics.)

**DANGERFIELD, F. J., AND CO., LTD.**, 261A Finchley Road, London, N.W.3. (Tel.: HAMPSHIRE 8044/8.) For all road aggregates, kerbs, setts. (See London.)

**EASTWOOD SALES, LTD.**, Eastwood House, City Road, E.C.1. (Tel.: Clerkenwell 2040.) Buxbrough pit. (Tel.: Hoddesdon 2456.) Producers and distributors of all grades of washed aggregates.

**GABRIEL, C., LTD.**, Painter's Lane, Enfield, Middx. (Tel.: HOWARD 4351/2/3.) Washed aggregates and building sand. Pits at Hertford and Enfield.

**HALL AND CO., LTD.**, Railway Yard, Orchard Road, Stevenage (Tel. 775), and at Hatfield. Gravel aggregates, concreting, plastering and building sand.

**HARTIGAN, G. F. X., LTD.** (See Buckinghamshire.)

**ST. ALBANS SAND AND GRAVEL CO., LTD.**, London Colney, St. Albans, Herts. (Tel.: Bowmansgreen 2271.) Pits at Smallford Lane, Smallford, and Bramfield Lane, Waterford, Marsh Road, Stanstead Abbotts.

**ST. IVES SAND AND GRAVEL CO., LTD.**, 22 The Broadway, St. Ives, Hunts. (Tel.: St. Ives 4421/2/3/4.) And Three Hills Pit, Codicote. (Tel.: Codicote 17.)

**TWICKENHAM GRAVEL CO., LTD.**, Eleanor Cross Road, Waltham Cross. (Tel. 23388.)

**WEBB, G. E., AND CO., LTD.**, 35 Magrath Av., Cambridge. (Tel.: 59869/53969/30353 (night).)

**WINFIELD, HENRY, LTD.**, Pit Lane, Lambs Lane, Hemstead, Herts. (Tel.: Berkhamsted 1208/9.) Pits at Hemel Hempstead, Watford, West Hyde, Rickmansworth, building sand.

**CONCRETE AGGREGATES, HOGGIN,**

# GUIDE

## HUNTINGDONSHIRE

**DARDON HILL QUARRIES (ELLIS AND EVERARD), LTD.**, near Leicester. (Tel.: Coalville 1226/78; or London: VIGILANT 2530.) (For details, see 'Leics.') **FERRERSANDS AGGREGATES, LTD.**, Northampton. (Quarry, Northamptonshire.) **GRAVEL PRODUCTS (HUNTS), LTD.**, Little Paxton, St. Neots, Hunts. (Tel.: St. Neots 308.) Pits at Little Paxton, St. Neots, Hunts; and Blunham, Beds. **HORNINGHAM GRAVELS, LTD.**, Horningham, Norfolk. (Tel.: Lowdham 3171—15 lines.) (For details, see 'Norfolkshire.') **NEENE BARGE AND LIGHTER CO., LTD.**, Market Chambers, Peterborough (Tel. 5534/5) and Ship End Quarries, Winsford, near Peterborough (Tel.: Wansford 284/5). Sand, gravel, hardcore, broken stone, ballast stones, silicon clay, sand and shingle. **S.T. IVES SAND AND GRAVEL CO., LTD.**, 22 The Broadway, St. Ives, Hunts. (Tel.: St. Ives 2441/2/3/4.) Producers of all grades of washed sand and gravel. Ready-mixed concrete. Precast concrete in every description. **WEBB, G. CAMBRIDGE**, 35 Magrath Ave., Cambridge. (Tel.: Saffron 53969, 50353 (night).) (See 'Cambs.')

KENT

**BRASSTED SAND PITS**, Brassted, Kent. (Tel.: 586.) London Office: 10A Ellery Street, S.E.15. (Tel.: North Cross 3337.) Soft and plastering sands, lime and sand-mix dry, hardcore, S.H. bricks, ashes, etc.

**BROWN BROS. (SITTINGBOURNE), LTD.**, Chalkwell Road, Sittingbourne, Kent. (Tel.: Sittingbourne 330.) Sand, ballast, shingle, hoggin, hardcore, timber, charcoal.

**CLUBB & CO., LTD.**, Dartford, Kent. (Tel.: Dartford 25431.) Pits in North Kent, Medway area and Sevenoaks district. All washed and crushed gravel aggregates, concreting and building sand.

**DIAMOND TREAD CO. (1950) LTD.**, Ditton Court Estate, Maidstone, Kent. (Tel.: West Malling 3444.) Quarry owners, tarmacadam, bituminous macadam and dry road stone manufacturers and suppliers. Head Office: 21-22 Old Bailey, London, E.C.4. (Tel.: City 7001-10 lines.)

**DIAMOND TREAD CO. (CHERTHWAITE LTD.)**, Swan Lane, Chertwiate, Cumbria. Quarry owners. Quarry owners: tarmacadam, bituminous macadam and dry roadstone suppliers. All inquiries to Area Office: Ditton Court Quarry, Larkfield near Maidstone, Kent. (Tel.: W. Malling 3444.)

**HALL AND CO., LTD.**, Canning Street, Maidstone, Kent. (Tel.: Maidstone 5105.) Gravel, Folkestone and Hastings Pit, Lyndhurst, near Larkfield, Riverhead. Gravel aggregates, concreting, plastering and building sand. Surecrete precision-mixed concrete.

**HARRIS, M. P. AND CO., LTD.**, Station Road, Paddock Wood, Kent. (Tel.: 385.) (See Sussex.)

LANCASHIRE

**BLAKESLEY, LTD.**, Sandside, Minthorpe (Tel.: 32512), Westmorland. (See Westmorland.)

**BUCKTON QUARRY**, Broken stone, all grades. (Tel.: Mossley 123.) Or write Main Road, Oldham.

**CASTLETON SAND AND GRAVEL QUARRIES, LTD.**, Trows Lane, Castleton, near Rochdale. (Tel.: Castleton 57100.) Or write Quarries, Bacup. (Tel.: Bacup 27877.) Washed pebbled sand, crushed washed stone aggregates; pitching stone.

**CROXDEN GRAVEL, LTD.**, Cheadle, Stoke-on-Trent. Staffs. (Tel.: Tean 393.) Manchester Office: Blackfriars 37667. Plant capacity, 2,000 tons per day.

**HARVEY & JOHN, W., LTD.**, Lundsfield Quarry, Carnforth, Lancs. (Tel.: Carnforth 100.) Large producers of highest quality washed sands, clean washed natural pebbles and crushed gravel aggregates for all construction purposes.

**HILTON GRAVEL, LTD.**, Rice Street, Liverpool Road, Manchester, 3. (Tel.: Deansgate 5455 and 5456.) Quarries at Cheshire, Lancashire, and at Ashton-under-Lyne, Stoke-on-Trent. (Tel.: London 32196.)

**HOVERINGHAM GRAVELS, LTD.**, Hoveringham, Nottingham. (Tel.: Loddington 3171-15 lines.) (For details, see Nottinghamshire.)

**HULLAND GRAVEL CO., LTD.**, Cheadle, Stoke-on-Trent. (Tel.: Cheadle 2323/4, 2119 and 2195.) Manchester Office: 100, Newgate Street, Gorton, Manchester 21. (Tel.: Gorton 2274/5.)

**PENMAENMWAIR AND WELSH GRANITE CO., LTD.**, all sizes and gradings of crushed granite aggregate. Immediate delivery ex stock. Liverpool and Preston Depots: Office: 7 Picton Road, Liverpool, 15. (Tel.: Sefton Park 7261.) Manchester Depot: Office: Cornbrook Road, Manchester, 15. (Tel.: Trafford Park 3830.)

**TERN MILL SAND AND GRAVEL CO., LTD.**, Almington Quarries, near Market Drayton, Staffs. (Tel.: Hales 2612/3.) (See Staffs. for details.)

**TREBRAHAN GRAVY CO., LTD.**, Lordsley Quarries, Willenhall, near Wolverhampton. (Tel.: Market Drayton 2111.) All sizes crushed or natural washed gravel. Twice washed sharp concreting sand. Plastering sand. Plant capacity: 2,000 tons per day.

**WITHERS LIMESTONE, LTD.**, Back Lane Quarry, Carnforth. (Tel.: Carnforth 427.) Graded limestone aggregates to B.S.S. all sizes. Immediate delivery ex stock.

**X.L. GRANITE (INGLETON), LTD.**, Head Offices: Clapham, via Lancaster. (Tel.: Clapham 318(9).)

granite aggregate.

**LEICESTERSHIRE**

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**BARDON HILL QUARRIES (ELLIS AND EVERARD), LTD.**, near Leicester. (Tel.: Coalville 1226/7/8, or London Office—VIGILANT 2530.) Best Leicestershire grey granite, dry and coated gradings to any specification; cold asphalt and wet mix. Prompt rail/road delivery.

**CLIFFE HILL GRANITE CO., LTD.**, Marketfield, near Leicester. (Tel.: Marketfield 561/2/3.) Granite aggregates to B.S.S. All sizes. Tarred and bituminous granite, concrete slabs and kerbs, tarmac, washed granolithic aggregate.

**DUSTON STONE QUARRIES, LTD.**, New Duston, Northampton. (Tel.: Brixworth 278 and 298. Duston 5050. *(See Northamptonshire.)*)

**ENDERBURY AND STONEY STANTON GRANITE CO., LTD.**, 21 New Wall, Enderbury. (Tel.: 20891.) Quarries at Enderbury, London Offices: 29 Dorset Square, N.W.1. (Tel.: Ambrosia 1141-3.)

LEICESTERSHIRE

**HILTON GRAVEL LTD.**, Hemington Fields, nee Shardlow, Derby. (Tel.: Shardlow 266.)  
**HOVERINGHAM GRAVEL LTD.**, Hoveringham, Nottinghamshire. (Tel.: Melton 8171-15 lines.) (For details, see Nottinghamshire.)  
**MOUNTSORREL GRANITE CO. LTD.**, 21 New Walk, Leicester. (Tel.: 20891.) Quarries at Mountsorrel, near Loughborough. [Inn, "Mountsorrel granite," a public house.] London Office: 29 Dorset Sq., N.W.1. (Amb. 1141.)  
**WANLIP GRAVELS LTD.**, Wanlip Road, Syston, Leicestershire. Any size or shape, ballast, scientifically balanced ballast. All to B.S.S. (Tel.: Syston 2327 and 2797.)  
**WRENTON HILL STONE GRAVELS CO. LTD.**, Melton Mowbray, Leics. (Tel.: Rotherby 205 or head office Melton 24881.) All grades washed aggregates and sand, transit mixed concrete.

#### LINCOLNSHIRE

**CONINGSBY SUPPLY CO., LTD.**, Registered Office: The Broadway, Woodhall Spa, Lincs. (Tel.: Woodhall Spa 2322.) Screened limestone, hardcore, gravel, chipping, flint, hoggin. Ex quarries or delivered.  
**DOW-MAC (PRODUCTS), LTD.**, Tallington, Stamford. All grades of washed sand and gravel. (Tel.: Market Deeping 2331.)

**GIBSONS, F. & ANG. SONS, LTD.**, Registered Office: Welby Road, Market Deeping, near Peterborough (Tel.: Market Deeping 3321/2383.) Pits at Langtoft, near Peterborough. (Tel.: Market Deeping 2210.) All grades washed sand and aggregates.

**HARTSHOLME GRAVEL AND SAND CO., LTD.**, Hartsholme Wood, Doddington Road, Lincoln. Sold by selling agents: Hartsholme Sand, Ltd., 17 Westgate, Lincoln. (Tel.: Lincoln 2331.)

**HOVERINGHAM GRAVELS, LTD.**, Hoveringham, Nottingham. (Tel.: Lowdham 1715—15 lines.) (For details, see Nottinghamshire.)

**HURDISS, J. W., LTD.**, Victoria Street, Grimsby (Tel.: Grimsby 3657.) Calcarous stone, lime, brick, plaster, building, plastering, concreting materials; also gravel, ballast, hoggin, roadmaking material.

**PETERBOROUGH QUARRIES**, Sandymoor, Maxey, Peterborough. (Tel.: Market Deeping 2355—3 lines.) Quarry at Ropsey, all grades of hardcore and broken stone. (See also Northants.)

**POLLARD, C., AND SON (TALLINGTON), LTD.**, Walk House, Langtoft, Peterborough. Pits at Tallington, near Stamford, Lincs. (Tel.: Market Deeping 2140.) All grades washed sand and aggregates. For 'Supercrete' ready mixed concrete, 'phone Market Deeping 3132.

**SCREENTON BROTHERS (BARTON-UPON-HUMBER), LTD.**, 21 Castledyke Street, Barton-on-Humber. (Tel.: Barton 2189.) All grades washed sand and gravel, roadstone, hardcore and broken stone.

**TRENTFORD GRAVELS, LTD.**, Head Office: Deangrass, Grimsby. (Tel.: Grimsby 5534.) Washed and graded gravel and sand, roadstone, hardcore, slag, tarmac, ashes, etc. Pits and quarries throughout the county.

LONDON

**BARDON HILL QUARRIES (ELLIS AND EVERARD), LTD.**, near Leicester. (Tel.: Coalville 1226/7/8; or London: Vigilant 2530.) (For details, see Leic.)

**BUCERICKS COMPANY, LTD.**, 37 Plaza Chambers, Clerkenwell, London, W.C.2. (Tel.: Clerkenwell 0534.) All grades of washed aggregate, sand, building sand, asphalt, grit. Sterilised dry sand accurately graded to buyers' requirements.

**COX, H. AND SONS, LTD.**, 33 Southampton Way, Cambridge, S.E.5. (Tel.: Regent 2155—lines.)

**DANGERFIELD, F. J., AND CO., LTD.**, 261A Finchley Road, N.W.3. (Tel.: Hampstead 8044-8.) Granite limestone or slag, coated or dry, all sizes and pitching, granite kerb and sets, felspar quartz and other minerals by road or rail, or ex London stock.

**DORSET LIMESTONES, LTD.**, Bumpers Lane, Easton, Portland, Dorset. (Tel.: Portland 2207/8.) (For details, see Dorset.)

**DRINKWATER, W. W. (WILLESDEN), LTD.**, Dudden Hill Lane, Willesden, N.W.10. (Tel.: Gladstone 6400/5.) Pits: Rush Green, Denham, Bucks. (Tel.: Denham 2241/2/3.) Also Staines Road, Hounslow Heath, Middlesex. (Tel.: Hounslow 6222/3.)

**GARIEL, LTD.**, Palmerston Lane, Enfield, Middx. The HOWAS 4351/2/3. Washed sand and building sand. Pits at Enfield and Hertford.

**GREENHAM SAND AND BALLAST CO., LTD.**, Chertsey Road, Feltham. (Tel.: Feltham 2829/7.) Pits at Hounslow, Feltham and Staines. Concrete aggregates, plastering and building sand.

**HANOVER CO., LTD.**, Hanover House, Eccleston Street, S.W.1. (Tel.: Sloane 7122), and at East Dulwich. Poplar and Wandsworth. Gravel M&P gates, concreting, plastering and building sand.

**HARTIGAN, G. F. X., LTD.**, Washed sharp sand to B.S.S. 882. (See Buckinghamshire.)

**KEEN, W. J., AND SONS**, 18 Granville Road, Epping, Essex. (Tel.: Epping 2520.) All kinds, ballast, shingle and hedge stones.

**LONDON BALLAST CO., LTD.**, (Tel.: Paddington 5064.) 1950 Porchester Terrace, North Paddington, W.2.

**READ, P. T., LTD.**, Gales Gardens, Bethnal Green E.2. (Tel.: Shoreditch 9128/9.) All kinds, ballast and shingles supplied and delivered; also ready mixed concrete. Pits: Fairlop Airfield, Forest Road, Ilford, Essex. Tel.: Hanwell 6117/8.

**SHAKERABLE CINDER QUARRY CO., LTD.**, Cinderford, Glos. (Tel.: Cinderford 3197.) "Doura" Facing. Engineering and Common Bricks in terra-cotta red and golden brown. (See Glos.)

MERIONETHSHIRE

**SALOP SAND AND GRAVEL SUPPLY CO.**  
Admaston, Wellington (Tel.: 961), Salop.  
  
**MIDDLESEX**  
  
**CROSS, GEO. C. AND CO., LTD.**, Uxbridge Road,  
Southall. (Tel.: Southall 2264/5/6). Concrete  
aggregates, hardcore, excavations, demolitions.  
**DRINKWATER, W. W. (WILLESDEN), LTD.**, Staines  
Road, Hounslow Ht., Middx. (Hounslow 6222/3).  
**GABRIEL, C. LTD.**, Palmers Lane, Enfield, Middlesex.  
(Tel.: HOWARD 4351/2/3). Washed aggregates and  
building sand. Pits at Enfield and Hertford.  
**GREENHAM SAND AND BALLAS, LTD.**, Croydon.  
Cheyne Road, Feltham, Middlesex. (Tel.: Feltham 2285/7).  
Pits at Feltham and Staines. Concrete  
aggregates, plastering, and building sand.

# CONTRACTORS' GUIDE TO AGGREGATES

## MIDDLESEX

**GRUNDON, S.**, 100/104 Harlington Road, Hillingdon, Middlesex. (Tel.: Uxbridge 3651/2/3.) Sand, ballast, shingle, hardcore, ashes, excavation and demolition.

**HALL AND CO., LTD.**, Chantrey House, Eccleston Street, S.W.1. (Tel.: Sloane 7122), and at Ashford and Brentford. Pits: Bedfont and Shepperton. Gravel, aggregates, concreting, plastering and building sand.

**LONDON BALLAST CO., LTD.** (Tel.: Paddington 5064), 155A Porchester Terrace, North, Fulham, W.2.

**TWICKENHAM GRANITE CO., LTD.**, Feltham Hill Road, Hanworth (Tel.: Feltham 2638.)

**NEAD, P. T. LTD.**, Gables Gardens, Bethnal Green, E.2. (Tel.: Shoreditch 9128/9.) All sands, ballast and shingles supplied and delivered; also ready-mixed concrete. Pits: Edmonton, Hackney, Montague Road, N.9. (Tel.: Shoreditch 9128/9.) and Fairlop Road, Forest Road, Ilford. (Tel.: Hatfield 6111/2.)

**STUART MACEY, LTD.**, Gordon Road, High Wycombe. (Tel.: High Wycombe 2591/2.)

## MONS-WALES

**BENGY AND SONS, LTD.**, Longmoor, Kingsland, Leominster, Herefordshire. (Tel.: Kingsland 301/4.) (See Staffs. under Herefordshire.)

**NASH ROCKS STONE AND LIME CO., LTD.**, Presteigne, Radnor. (Tel.: Presteigne 352.) (See Herefordshire for details.)

**OLD RADNOR TRADING CO., LTD.**, Quarries in Radnorshire. (Tel.: Kington 421.) (See Herefordshire.)

**SALOP SAND AND GRAVEL SUPPLY CO.,** Admaston, Wellington (Tel.: 961). Salop.

**TERN HILL SAND AND GRAVEL CO., LTD.**, Amlington Quarries, near Market Drayton, Staffs. (Tel.: Hales 261/2/3.) (See Staffs. for details.)

## MONMOUTHSHIRE

**MONMOUTHSHIRE ASSOCIATED QUARRIES, LTD.**, Head Office: 38 Chepstow Road, Newport, Mon. (Tel.: Newport 58311/2.) Suppliers of all grades of concrete aggregates, road metalling, pitching stone, tarmacadam and bituminous macadam in limestone, dolomite and blue pennant stone. Quarries throughout the county.

**SHAKEMANTLE QUARRY CO., LTD.**, Cinderford, Glos. (Tel.: Cinderford 3197.) "Doura" Facing, Engineering and Common Bricks in terra-cotta, red and golden brown. (See Glos.)

**WHITECLIFF QUARRIES AND BRICKWORKS, LTD.**, Coleridge, Glos. (Tel.: 3158/9.) (See Gloucestershire.)

## MONTGOMERYSHIRE

**NASH ROCKS STONE AND LIME CO., LTD.**, Presteigne, Radnor. (Tel.: Presteigne 352.) (See Herefordshire for details.)

**SALOP SAND AND GRAVEL SUPPLY CO.,** Admaston, Wellington (Tel.: 961). Salop.

## NORFOLK

**BARDON HILL QUARRIES (ELLIS AND EVERARD), LTD.**, near Leicester. (Tel.: Coalville 1226/7/8; or London: VIGILANT 2530.) (For details, see Leics.)

**JOHNSON, P. C. H., LTD.**, Station Road, Terrington St. Clement, near King's Lynn. (Tel.: Terrington St. Clement 248.) Washed and screened gravel rodded, washed, sharp and fine sands.

**ST. IVES SAND AND GRAVEL CO., LTD.**, 22 The Broadway, St. Ives, Huntingdon. (Tel.: St. Ives 2441/2/3/4 and Conder Weston 313.) Pits at St. Ives and Knebworth, near Thetford.

**NETTERTON STONE QUARRIES, LTD.**, Pix Farm Lane, Hemel Hempstead, Herts. (Tel.: Berkhamsted 1208/9.) Pits at Netterton. Concrete aggregates, building sand.

**THORPE AND VEW PITS LTD.**, Harvey Lane, Norwich. (Tel.: Norwich 33243/4.) Washed and graded aggregates, stone and gravel delivered to all parts of Norfolk and Suffolk.

## NORTHAMPTONSHIRE

**BARDON HILL QUARRIES (ELLIS AND EVERARD), LTD.**, near Leicester. (Tel.: Coalville 1226/7/8; or London: VIGILANT 2530.) (For details, see Leics.)

**BICESTER STONE CO., LTD.**, Stratton Audley, Bicester, Oxon. (Tel.: Stratton Audley 391/2.) Manufacturers and suppliers of all grades of limestone, tarmacadam, dry, pitching stone, hardcore, etc.

**BRAYBROOK, E. W., LTD.**, Newton Road, Higham Ferrers, Northants. (Tel.: Rushden 3344 and 3345.) All grades of washed and graded aggregates to B.S.S. building sand, hardcore, etc.

**DOWMAG (PRODUCTS) LTD.**, Tallington, Stamford. All grades of washed sand and gravel. (Tel.: Market Deeping 2301.)

**DUSTON STONE QUARRIES, LTD.**, New Duston, Northampton. (Tel.: Brixworth 278 and 298; Duston 505.) Producers of building and walling stone, roadstone, hardcore, broken stone, ashes, sand, gravel and hoggin. Immediate delivery throughout Northamptonshire.

**FERDERSAND AND AGGREGATES, LTD.**, Northampton Road Quarries, Rushden, Northants. (Tel.: Rushden 2354/5.) Largest producers in the country of grades of high quality concrete aggregate to B.S.S. Delivered throughout Northamptonshire and adjoining counties.

**GIBSON, F. B. AND SONS, LTD.**, Welby House, Market Deeping, Peterborough. (Tel.: Market Deeping 3321/2/3.) (See Lincolnshire for details.)

**KETTON STONE CO.** (Prop. Andrew's Garage), Ketton, near Stamford. (Tel.: Ketton 206.) Hardcore, roadstone, crushed stone, top soil, silica clay.

**MACKANESS, LTD.**, Ransome Road, Northampton. (Tel.: Northampton 589.) Producers of all grades of washed aggregates. Bulk bags. Mixmaster (lime/sand mortar). Prompt deliveries.

**WINE BARGE AND LIGHTER CO., LTD.**, Market End Quarries, Peterborough (Tel.: 5534/5.) and Ship Lane, Hemel Hempstead, near Peterborough (Tel.: 384/5). Roadstone, hardcore, broken stone, ballast, ashes, silica clay and sand.

## NORTHAMPTONSHIRE

**NEWARK (PETERBOROUGH) SAND AND GRAVEL CO., LTD.**, 127 Eastfield Road, Peterborough. (Tel.: Peterborough 2091.) All grades washed and screened gravel and sand.

**PETERBOROUGH QUARRIES, LTD.**, Sandylands, Maxey, Peterborough. (Tel.: Market Deeping 2355.) Eight quarries supplying all grades of hardcore and broken stone. Also Wetmix at Yarwell, Wansford. All grades gravel and sand at Maxey.

**POLLARD, C. AND SON (TALLINGTON) LTD.**, Wall House, Langtoft, Peterborough. (Tel.: Market Deeping 2140.) (See Lincolnshire for details.)

**STORTON, F. E., LTD.**, Weedon Road, Northampton. (Tel.: Northampton 3358.) Producers of washed gravel and sand to B.S.S.

## NORTH WALES

**CAWOOD, WHARTON AND CO., LTD.**, Pistyll Gwyn Quarry, Llanarmon, near Mold. (Tel.: Llanarmon-Yn-Lal 27.) Crushed limestone and tarmacadam, all grades.

**CHESHIRE AND NORTH WALES TARRED MACADAM CO., LTD.**, Llanarmon, near Mold. (Tel.: Llanarmon-Yn-Lal 43.) Hard, broken limestone; dry and coated to B.S.S. Inquiries to Registered Office—Market Chambers, Tower Square, Wrexham, Stoke-on-Trent. (Tel.: Stoke-on-Tower 8801.)

**ENSTON BROS.**, Llwyn Ifaf Quarry, Clynnogfawr, Caernarvon. (Tel.: Clynnogfawr 297/8.) All sizes crushed, washed natural sand and gravel. Highest quality. Precast concrete products, at our Griffiths Crossing Factory, Caernarvon. (Tel.: Caernarvon 2535/6.) Washed sand and gravel ex quarry, Penygarn and Gwydir Quarries, Ltd., Treffry, Llanwrst Denbighshire. (Llanwrst 38.)

**PENMAENMAWR AND WELSH GRANITE CO., LTD.**, Quarries at Penmaenmawr (Tel.: 2256/8), and at Trevor (Tel.: Clynnogfawr 223.) Caernarvonshire. All sizes and gradings of crushed granite aggregate. Any quantity per day; immediate delivery ex stock. Coated granite also available.

**TERN HILL SAND AND GRAVEL CO., LTD.**, Amlington Quarries, near Market Drayton, Staffs. (Tel.: Hales 261/2/3.) (See Staffs. for details.)

## NOTTINGHAMSHIRE

**AIZLEWOOD, DOUGLAS E.**, Bow Bridge, Rotherham. (Tel.: Rotherham 2622.) Crushed and graded limestone; all grades of washed gravel and sands.

**BARDON HILL QUARRIES (ELLIS AND EVERARD), LTD.**, near Leicester. (Tel.: Coalville 1226/7/8; or London: VIGILANT 2530.) (For details, see Leics.)

**GLENN QUARRIES, LTD.**, Central Chambers, Willgate, Rotherham. (Tel.: Rotherham 5223.) Crushed and graded stone, concreting sand, building sand, plastering sand and crushed gravel could be collected ex quarry or delivered.

**GUNTHORPE GRAVELS (1958), LTD.**, (Tel.: Nottingham 77357; and Works: Lowdham 2131.) An associate company of T. C. Campbell, Ltd. All grades washed gravel and sand to B.S.S.

**HOVERINGHAM GRAVELS, LTD.**, Hoveringham, Nottingham. (Tel.: Lowdham 3171—15 lines.) Quarries at Hoveringham, Holme Pierrepont, Colwick, Bleasby and Newark. Other quarries throughout the country—delivers in 21 counties. All grades of washed gravel and sand to any specification. Crushed quartzite for surface dressing of roads in speciality. Combined plant capacity 20,000 tons per day.

**NEWARK STONE AND CONCRETE CO., LTD.**, Great Street, New Balderton, Newark, Notts. (Tel.: Newark 401.) All grades washed sand and aggregates.

**NORTH NOTTS. GRAVEL CO., LTD.**, Belmoeor, Retford, Notts. (See Yorkshire.)

**SALISBURY AND WOOD, LTD.**, Matlock. (Tel.: 272/273.) (For details, see Derbyshire.)

## OXFORDSHIRE

**BARDON HILL QUARRIES (ELLIS AND EVERARD), LTD.**, near Leicester. (Tel.: Coalville 1226/7/8; or London: VIGILANT 2530.) (For details, see Leics.)

**BICESTER STONE CO., LTD.**, Stratton Audley, Bicester, Oxon. (Tel.: Stratton Audley 391/2.) Manufacturers and suppliers of all grades of limestone, tarmacadam, dry, pitching stone, hardcore, etc.

**CURTIS, J. AND SONS, LTD.**, Botley Works, Oxford. (Tel.: Oxford 41081/2/3.) Sand and all grades of washed aggregates. Pit at Radley, near Abingdon. (Tel.: Abingdon 441.)

**DANGERFIELD, F. J., AND CO., LTD.**, 261A Finchley Road, London, N.W.1. (Tel.: Hampstead 8044/5.) For all road aggregates, kerbs, setts. (See London.)

**HALL AND CO., LTD.**, Longmoor House, Ashton Vale Road, Bristol, 3. (Tel.: 63001.) Gravel aggregates, concreting, plastering and building sand.

**WAINWRIGHT, JOHN, AND CO., LTD.**, Shepton Mallet. (Tel.: Shepton Mallet 2366/7.) All sizes basalt, coated basalt, concrete aggregates, filtering media, building blocks and slabs.

## RUTLAND

**GIBBONS, F. B. AND SONS, LTD.**, Welby House, Market Deeping, Peterborough. (Tel.: Market Deeping 3321/2383.) (See Lincolnshire for details.)

**HOVERINGHAM GRAVELS, LTD.**, Hoveringham, Nottingham. (Tel.: Lowdham 3171—15 lines.) (For details, see Nottinghamshire.)

**KETTON STONE CO.** (Prop. Andrew's Garage), Ketton, near Stamford. (Tel.: Ketton 206.) Hardcore, roadstone, crushed stone, top soil, silica clay.

**PETERBOROUGH QUARRIES, LTD.**, Sandylands, Maxey, Peterborough. (Tel.: Market Deeping 2140.) Quarry at Greetham, all grades of broken stone and hardcore. (See also Northamptonshire.)

**POLLARD, C. AND SON (TALLINGTON) LTD.**, Wall House, Langtoft, Peterborough. (Tel.: Market Deeping 2140.) (See Lincolnshire for details.)

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**OLD RADNOR TRADING CO., LTD.**, Kington. (Tel.: 421.) (See Herefordshire.)

**SALOP SAND AND GRAVEL SUPPLY CO., LTD.**, Admaston, Wellington (Tel.: 961). Salop.

**TERN HILL SAND AND GRAVEL CO., LTD.**, Almington Quarries, near Market Drayton, Staffs. (Tel.: Hales 261/2/3.) (See Staffs. for details.)

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**SHIRE OAK GRAVELS, LTD.**, (See Shropshire.)

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**HOVERINGHAM GRAVELS, LTD.**, Hoveringham, Nottingham. (Tel.: Lowdham 3171—15 lines.) (For details, see Nottinghamshire.)

**KEVIN LIME CO., LTD.**, Oakamoor, Staffs. (Tel.: Oakamoor 385/386.) Clean graded dry limestone, all to B.S.S. sizes. Output 1,000 tons per day.

**NASH ROCKS STONE AND LIME CO., LTD.**, Presteigne, Radnor. (Tel.: Presteigne 352.) (See Herefordshire for details.)

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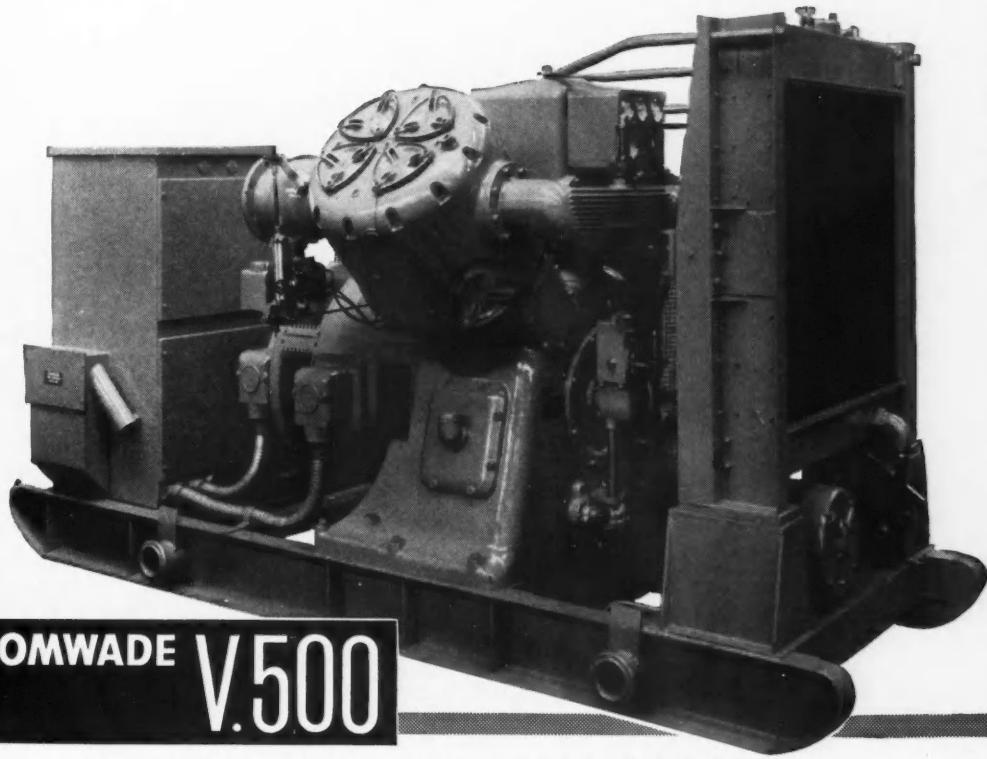
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## THE INDEX TO DISPLAYED ADVERTISEMENTS WILL BE FOUND ON PAGE 200

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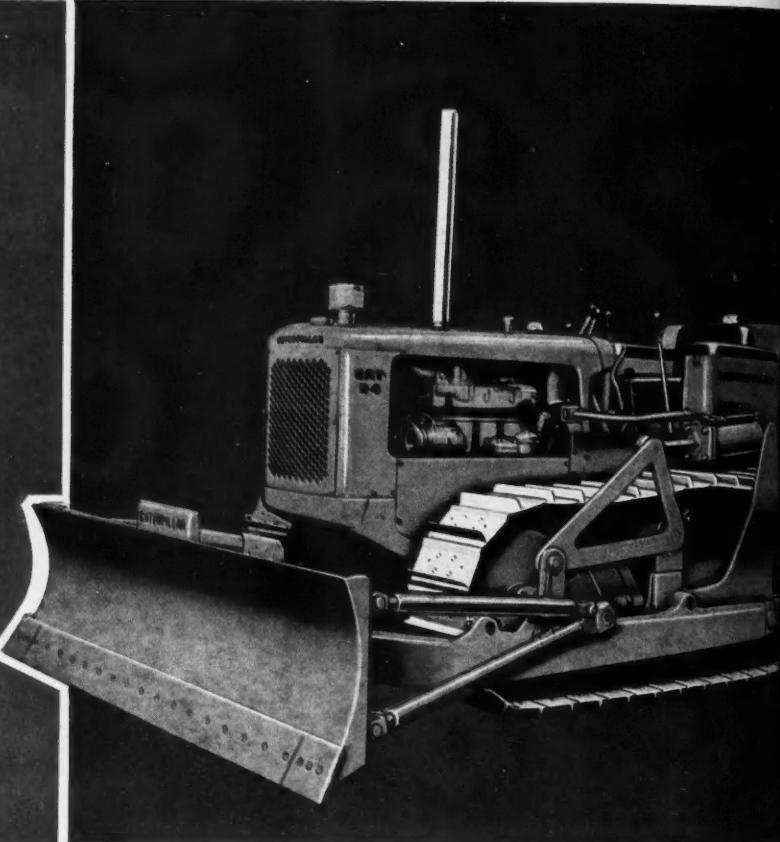
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